

J. F. Gallacher.

ON
THE FUNCTIONS OF THE BRAIN
AND
OF EACH OF ITS PARTS:
WITH
OBSERVATIONS ON THE POSSIBILITY OF DETERMINING THE IN-
STINCTS, PROPENSITIES, AND TALENTS, OR THE MORAL
AND INTELLECTUAL DISPOSITIONS OF MEN AND
ANIMALS, BY THE CONFIGURATION
OF THE BRAIN AND HEAD.



THE
INFLUENCE OF THE BRAIN
ON THE
FORM OF THE HEAD:

THE DIFFICULTIES AND MEANS
OF DETERMINING THE FUNDAMENTAL QUALITIES AND FACULTIES, AND OF DISCOVERING THE SEAT OF THEIR ORGANS:

EXPOSITION
OF THE FUNDAMENTAL QUALITIES AND FACULTIES, AND THEIR
SEAT, OR ORGANOLGY.

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CONTENTS.

SECTION I.

	Page
On the influence of the brain on the form of the cranium, or an examination of the question, — in what circumstances can we derive, from the external form of the cranium or head, inductions relative to the degree of development of the brain, as a whole, or to that of any of its parts, — and consequently form a judgment of the degree of the moral and intellectual dispositions, by the examination of the external form of the cranium or head?	1
A view of the osteology of the cranium, so far as is necessary to enable us to understand the influence that the brain exercises on this osseous structure	6
The influence of the brain on the cranium previous to birth	7
The forms of the crania and brains differ originally	8
Can the form of the head be modified either during the birth of the child or by compression or malaxation?	9
The influence of the brain upon the cranium from birth to adult age	12
The influence of the development of individual cerebral parts on the form of the head	17
Coincidence of the surface of the brain with the external surface of the cranium, in mature age, so far as organology is concerned	19
Observations on the examination of the heads and crania of animals	28
Of the influence of the brain on the form of the cranium in the decline of life	30
Answers to some objections against the influence of the brain on the form of the cranium in a state of health	34
Of the influence of the brain on the form and texture of the cranium in a state of disease	43

	Page
The influence of the brain on the cranium in those cases of originally defective conformation of the brain	43
First observation	45
Second observation	46
The influence of the brain on the form of the cranium in Hydrocephalus	51
Influence of the brain upon the cranium in mental diseases	55
The influence of the brain on the cranium in those cases where certain cerebral parts are more diseased than others	59
The influence of the brain on the cranium in subjects predisposed to suicide	62
The influence of the brain on the cranium, in lesions of the latter, and in certain diseases of the membranes	63

SECTION II.

Discourse preliminary to organology	66
On the difficulties and the means of determining the fundamental qualities and faculties, and of discovering the seat of their organs in the brain	66
Of the means necessary to discover the functions of the different parts of the brain, or of determining the fundamental qualities and faculties and the seat of their organs	87
Of anatomy considered as a means of discovering the functions of the different parts of the brain	87
Of the simple dissection of the brain, as a means of determining the moral and intellectual fundamental powers, and of discovering the seat of their organs	88
The anatomy of the brain in its physiological applications, as a means of discovering the fundamental powers of the mind and the seat of their organs	91
Of the pathological anatomy and physiology of the brain, as a means of discovering the fundamental powers of the mind and the seat of their organs	94
Of the mutilations of the brain, as a means of determining the fundamental qualities and faculties and the seat of their organs	97
Can comparative anatomy and physiology at present serve as a means for discovering the fundamental, moral, and intellectual powers, and the seat of their organs?	100
Exposition of the most convenient means for determining the fundamental qualities and faculties, and the seat of their organs	104

	Page
First method, derived from common language, to attain to the knowledge of the fundamental qualities and faculties, and the discovery of the seat of their organs	108
Second method; counter proof	112
Third method derived from the particular conformation of the head of the individual	112
Fourth method; collection of heads cast in plaster	114
Fifth Method; collection of human crania	116
Observations on the aforesaid methods of discovering the fundamental faculties and qualities, and the seat of their organs	118
Means of discovering the fundamental qualities and faculties, or the fundamental powers of the mind, as well as their seat. Continuation	120
Sixth method	120
Seventh method; comparative anatomy and physiology; natural mutilations of the brains of animals	121
Eighth method; accidental mutilations	128
Ninth method, taken from the succession and the arrangement of the organs	129
Definition of the ideas, fundamental, primitive, radical qualities, faculties	133
Description of the brain, of the head, and the cranium, so far as the knowledge of it is necessary for the perfect understanding of the seat of the organs	135
The bones which form the osseous box of the brain	137
Sphenoid bone	137
Temporal bones	137
Occipital bones	137
Parietal bones	137
Frontal bone	138
Method of examining the organs	139

SECTION III.

Exposition of the fundamental powers, or the primitive, radical moral qualities and intellectual faculties; the instincts, propensities, sentiments, talents, and of the particular seat of their organs	141
Instinct of generation, of reproduction; instinct of propagation, &c.	141
L'instinct de la reproduction est une fonction du cerveau, et n'appartient nullement aux parties sexuelles	142

	Page
I. Action du cerveau sur les organes génitaux ; désirs vénériens naissant directement de l'action cérébrale	145
II. Action des organes genitaux sur le cerveau ; désirs vénériens excités par l'action de ces organes	149
Le cervelet est l'organe de l'instinct de la génération	154
Historique de la découverte que le cervelet est l'organe de l'instinct de la propagation	155
Preuves prises dans l'état de santé, que le cervelet est l'organe de l'instinct de la propagation	158
Observations générales sur l'organe de l'instinct de la propagation, et sur cet instinct lui-même dans l'état de santé	176
Preuves, prises de l'état de maladie, en feveur da l'assertion que le cervelet est l'organe de l'instinct de la propagation	180
Influence de la castration sur le cervelet	180
Influence de la castration unilatérale sur le cervelet	184
Influence de la lésion des parties sexuelles sur le cervelet	185
Influence des lésions du cervelet sur les parties génitales	189
Influence des maladies du cervelet sur les parties génitales, et principalement sur l'instinct de la propagation. Manie érotique	200
Observations sur l'activité ou l'inaction de l'instinct de la propagation dans l'idiotisme	211
L'instinct de la propagation survit à la destruction des parties génitales, et subsiste dans l'absence de ces parties	214
Maladies particulières du cervelet	216
Observation première	217
Deuxième observation	219
Ouverture du cadavre	220
Observation troisième, rédigée par M. Mance, exélève interne de deuxième classe à la Pitié, et prosecteur à l'ampithéâtre des hôpitaux	221
Observation recueillie par M. Dubois, élève interne de première classe à l'hôpital de la Pitié	224
Suite des recherches sur les maladies organiques du cervelet, par M. Serres, médecin de l'hôpital de la Pitié, etc.	225
Observation recueillie par le docteur Falret	226
Apoplexie cérébelleuse	228
Ouverture du cadavre	230
Apoplexie cérébelleuse sans érection du pénis	331
Ouverture du cadavre	233
Apoplexie cérébelleuse ayant son siège dans le lobule tonsillaire	234
Apoplexie cérébelleuse chez la femme	235

	Page
Cérébellite chronique	235
Cérébellite chronique, observée chez une singe	237
Apoplexie cérébelleuse chez la femme ; observation communiquée par le D. Falret	237
Conclusion	238
Philosophical observation	240
Some remarks on the report made to the Academy of Sciences on experiments relative to the functions of the nervous system, by Baron Cuvier, perpetual secretary of the Academy	240
II. Love of offspring	263
History of the discovery of the love of offspring, as a fundamental quality, and of its organ	264
Natural history of the love of offspring	266
Opinions of philosophers on the causes of the love of offspring	272
The love of offspring and the effects of its greater or less develop- ment ; continued. In man	280
Alienation of the love of offspring	284
Of the seat of the external appearance of the organ of the love of offspring in animals	288
The influence of castration on the organ of the love of offspring	293
General remarks on the instinct of propagation and the love of offspring	295
III. Attachment. Friendship. History of its discovery	299
Natural history of attachment and friendship in man and animals	300
On marriage, in man and animals	304
Alienation arising from attachment	309
Of sociability in animals and man	310
Of the seat and external appearance of the organ of attachment	312

FUNCTIONS OF THE BRAIN.

SECTION I.

ON THE INFLUENCE OF THE BRAIN ON THE FORM OF THE CRANIUM, OR AN EXAMINATION OF THE QUESTION, — IN WHAT CIRCUMSTANCES CAN WE DERIVE, FROM THE EXTERNAL FORM OF THE CRANIUM OR HEAD, INDUCTIONS RELATIVE TO THE DEGREE OF DEVELOPMENT OF THE BRAIN, AS A WHOLE, OR TO THAT OF ANY OF ITS PARTS, — AND CONSEQUENTLY FORM A JUDGMENT OF THE DEGREE OF THE MORAL AND INTELLECTUAL DISPOSITIONS, BY THE EXAMINATION OF THE EXTERNAL FORM OF THE CRANIUM OR HEAD ?

IN the first volume of this work I have proved, that the instincts, propensities, and faculties are innate, in animals, as well as in man, and that, in this life, the manifestation of none of these dispositions is possible, without the aid of material instruments.

In the second volume, I have shown, that, of all the parts which constitute animal organization, the brain is the only one, which can be exclusively regarded as the instrument, by which the moral qualities and intellectual faculties are exercised.

Finally, I have proved that the brain is composed of several organs, constituting as many particular material instruments, as there are moral qualities and intellectual faculties, essentially distinct.

Now the question arises, whether, in the doctrine of the cerebral functions, we should adhere to general

principles, or whether there are any means by which we can determine the functions of each part of the brain, and establish the seat of each of the organs of the fundamental moral qualities and intellectual faculties.

All my predecessors, even those who admit the existence of a plurality of mental organs, have failed in their attempts to determine the seat of each of them ; and it is by an examination of the form of the crania and heads, and comparing this with the moral qualities and the intellectual faculties, with which such individuals are endowed, that I have finally succeeded.

How is it possible to do this? Does there exist, then, a relation or an exact correspondence between the brain, the cranium, and the head? The possibility of resolving this question, supposes that the organs of the mind are situated on the surface of the brain ; that they are more or less depressed, more or less flattened, more or less elevated, larger or smaller, according as the exercise of their functions is susceptible of more or less energy ; that these varieties of form of the particular cerebral parts are developed on the surface of the cranium and head ; propositions which require a rigorous demonstration.

I have proved, in the second volume, that the disposition to functional action is as much more energetic, as the sound organ, other things being equal, has received a more considerable development ; and as it respects this, I have entered into all the necessary details. The following observations will constitute an answer to the question, — How far does truth bear us out in saying, that the organs of the soul are situated on the surface of the brain ?

We must recollect, that each nerve, after being sufficiently increased, is ramified and spread out in that part where it is destined to act. The nerves of sensibility and motion are distributed to the skin and muscles ; the nerves of the senses are each ramified

on the external organ to which they belong. For example, the olfactory nerve is spread out upon the pituitary membrane of the nose; the nerve of taste terminates in minute branches in the tongue; the expansion of the optic nerve forms the retina.

The part in which the nerve is thus spread out, is not, in fact, the whole of the organ, but, from the extent of the expansion, we may infer the size of the nerve itself. The surface on which the olfactory nerve is spread out in the dog and horse, is much greater than in man. Hence, from its origin to its minute ramifications, this nerve is larger in these animals than in our species.

Nature follows precisely the same law in the brain. The different cerebral parts arise and increase in different places; they form larger or smaller fibrous bundles, which terminate in ramifications. All these ramifications of the different fibrous bundles, when re-united, form the hemispheres of the brain.

These hemispheres are simply a nervous membrane, one or two lines in thickness, covered, on the whole of its external surface, with a greyish, pulpy, or gelatinous substance.

Let us imagine this great nervous membrane, as we see it in large dropsies of the brain, folded like a furbelow, so that each fold shall be twelve or sixteen lines in depth, (more or less,) we shall then have their convolutions, the intervals of which have received from anatomists the name of anfractuosities, and we shall have also the two hemispheres, such as nature has placed them in their folded state in the cranium. The ramification of the olfactory nerve forms analogous folds in the alæ of the nose.

A small nervous bundle can form only a small ramification, and consequently but minute folds; and but one or more small convolutions. A considerable nervous bundle, on the contrary, forms an extensive and thick ramification, and consequently, folds and convolutions of much greater volume.

Thus, then, although all the integral parts of any one cerebral organ, from their origin to their termination, are not situated on the surface of the brain, nevertheless, we can deduce from the size of the fold, or convolution, positive inferences as to the volume of the whole organ. The longer, deeper, and broader the convolutions are, the more space do they occupy, and the more are they elevated above those that are shorter, narrower, and more superficial; so that a brain, the integrant parts of which have acquired an unequal development, exhibits on its surface depressions, level parts, and eminences.

In some cases, the ramification of a nervous bundle or organ, is folded into a single convolution; in others it forms many.

The folds or convolutions do not all assume the same direction. Some run straight from before backwards; others go transversely from above laterally; others again take an oblique direction; almost all go somewhat in a serpentine course. Some form pyramids; others run spirally, &c.

The fundamental forms of these convolutions are the same in all human brains, and they correspond in the two hemispheres of the same brain; in a word, they are symmetrical.

In small brains, as those of the dog, horse, ox, sheep, &c., this symmetry is perfect; in man, small divisions vary in their forms. (Pl. III. and XIV.)

All the forms of the principal divisions, when these last have acquired a great development, are manifested on the cranium under the same type. Hence result the different forms and directions of the organs, which I have delineated on the surface of crania and busts.

This explains the relation or correspondence that exists between craniology and organology, or the doctrine of the functions of the different parts of the brain, (cerebral physiology,) — the sole object of my researches.

How can it be proved that the external surface, as well as the internal surface of the cranium affords a faithful impression of the external surface of the brain, and consequently, becomes the principal means, not only of discovering the original powers of the mind, but further—the means of determining the seat of their organs?

For more than twenty years that I have taught this truth, with the exception of some of my auditors who have published my lectures, few authors have paid any attention to it. Galen long since said that the cranium is moulded on the brain, and not the brain on the cranium.* Du Laurens† and Diemerbroek‡ taught the same thing in the seventeenth century. In 1743, Fischer wrote a particular treatise on this subject.§ Lavater|| and Blumenbach, from whom I have borrowed these observations, were equally convinced of the truth of this. M. Spurzheim has proved it at length in his work,¶ and we have also inserted in the Dictionary of Medical Sciences a short article on the same subject.**

As this object is not only of the greatest importance in the science of Organology, but is even absolutely essential to the existence of the doctrine, I shall treat it more in detail than it has heretofore been done, and shall consider it under all the points of view, offered both in health and in disease.

* De usu partium, lib. viii.

† Hist. Anat. p. 139.

‡ Anat. Corp. human. p. 554.

§ Dis. de modo quo ossa se vicinis accommodant partibus. Lug. Bat. 1743.

|| Phys. frag. t. ii. p. 165.

¶ Physiognom. Sys. p. 217 et suiv.

** Med. Sci. t. vii. p. 260 et suiv.

A View of the Osteology of the Cranium, so far as is necessary to enable us to understand the Influence that the Brain exercises on this osseous Structure.

In the examination of the forms of the cranium, the organologist has no other object in view, than to determine the degree of development of the cerebral parts; consequently only those parts of the cranium, whose form depends upon the brain, have an interest for him.

The jaws, the mastoid processes, and all the other bony prominences, have nothing in common with the brain, and consequently do not contribute in the least degree to the development of the form of the cranium. We have only to concern ourselves therefore with the osseous box of the brain.

This box is composed of eight bones, viz., 1. the sphenoidal; 2. the frontal, which at the period of birth is in two parts, which are afterwards united together, and in the adult constitute but one bone; 3. the two temporal; 4. the occipital; 5. the two parietal; 6. the ethmoidal.

These bones are united together by sutures in such a manner as to form one great cavity, which contains the brain and some other nerves. On this account it is called the cerebral cavity, or the bony box of the brain.

PLATE VIII. represents the brain seen in profile, in its natural situation in the cranium. PLATE IX. represents the same seen from above. PLATE XI. represents a vertical section which divides the whole brain into its two symmetrical halves. PLATES X. and XII. also represent the brain seen in profile, and exposing a part of its internal structure. PLATE IV. shows the whole brain as seen from its base. PLATE XIII. also represents the brain seen by its base, situated in the cranium, some of its parts being prepared. In all these brains, the convolutions are exposed, the vascu-

lar membrane, which follows them in all their anfractuositities, and which furnishes sanguineous vessels to all the nervous fibrils, having been removed.

It will be seen by these engravings, all of which represent the brain in its natural dimensions, that the whole cavity of the cranium is filled by the brain; and that throughout it is in contact with the internal surface of the cranium.*

I shall hereafter give a more detailed description of the bones of the cranium, so far as their form varies, and where this variety of form has a bearing on Organology. Now we proceed to the examination of the question—whether the internal as well as the external surface of the cranium, manifests the impress of the surface of the brain? In this inquiry, I shall commence with examining these organs in the healthy condition, and conclude with remarks upon them in a state of disease.

The Influence of the Brain on the Cranium previous to Birth.

In the first few weeks after conception, the brain is not yet surrounded by any osseous substance. It is covered by four membranes; the pia-mater or vascular membrane; the arachnoid; the dura-mater, composed of two layers; and a transparent cartilaginous membrane. All these membranes exactly envelope the surface of the brain; they ought then to represent with exactness its convolutions externally.

About the seventh or eighth week, there is formed in the cartilaginous membrane as many points of ossification as there exist bones in the cranium. To these points new bony molecules are gradually add-

* I need not observe to anatomists, that the regions of the internal surface of the cranium, corresponding to the longitudinal and lateral sinuses, are an exception.

ed; and in this way diverging rays are formed from a central point of ossification. (Pl. xxxvi. fig. 1.) The intervals of these radii are by degrees filled up with bony matter. In this manner osseous plates are formed, which soon meet each other at their edges.

Sometimes we can distinguish the traces of this radiated crystallization, even many years after birth. The place where each of the bones of the child is hardest, was in the fœtus the point of ossification. It is found near the middle of each bone.

Now, as the deposition of the bony matter follows the direction of the cartilaginous membrane, and as this is moulded upon the brain, it follows necessarily that the cranium is moulded upon the brain.

So far no one has contradicted me, in what I have advanced on this subject. Never has a child been born with a head of a shape similar to that, which it assumes in the adult age. Among the heads of new-born infants we do not observe near so great a difference, as between those of adults. Does not this lead to the presumption, that the form of the head is determined by external and accidental circumstances?

The Forms of the Crania and Brains differ originally.

Hereditary resemblances in the countenance, as well as in the forms of the other parts of the body, prove abundantly that future forms are determined at the moment of conception. I mean by future forms, the tendency to those forms which the parts afterwards assume. A child is never born with an aquiline nose, but the nose of such a new-born child, as well as all its other parts, have a tendency to adopt certain forms.

This is the reason why the forms of the different parts differ originally in different infants, to so great a degree that an attentive observer, who would de-

vote the necessary time to this study, might determine from the forms of the fœtus, what would be the forms of the adult.

Sæmmerring, and many accoucheurs, as well as myself, have constantly found varieties of forms in different heads of new-born children. It may then be admitted that the future form of the head is originally impressed upon it. It is reasonable, however, that we should except from this law those cases, where the *nisus formativus* is opposed by external violence.

Can the Form of the Head be modified, either during the Birth of the Child, or by Compression or Malaxation?

Some physiologists seriously pretend, as M. Fodéré,* and others maintain ironically, that, as a consequence of craniology, all our dispositions and talents would depend upon the form of the pelvis, the action of the forceps, or the dexterity of the midwife. Even in common accouchements, children come into the world with heads very much deformed; but this malformation does not concern the brain, nor the osseous box that encloses it. It only takes place in the soft parts. The compression that the head undergoes in its passage through the pelvis, causes a stagnation in the fluids, which makes a tumor between the top of the head and the occiput. Consequently the head acquires an elongated form. But the circulation is soon reëstablished, and the head of the child resumes the *form which it had in the womb of its mother.*†

* *Traité du Delire*, tom. ii. p. 128.

† In the books of physiology and midwifery, we read: "The head (of the fœtus) will separate easily from the body, if the lower jaw is caught over the junction of the pelvis; because the base of the cranium and this jaw resist in their whole extent, and together present an extensive surface incapable of yielding, as the top of the head does in common accouchements, where the bones, slipping in part over each other, form a conical figure, which facilitates delivery." — (Levret on Difficult Parturition.)

If there are midwives so inconsiderate as to undertake to give fanciful forms to the heads of children, by pressing and moulding them, at least they do not

“When the head is elongated in parturition, it is always in the direction of its oblique diameter, so that the point of the cone, which it then represents, is above the posterior angle of the parietal bones. But it cannot undergo this change without diminishing in thickness from side to side, and often from the summit to the base.” — (Baudelouque, *Accouchements*.)

“As in the fœtus, the osseous pieces of the cranium are numerous, thin, flexible, and united together only by extensible membranes, the head, either by the efforts of expulsion, or by pressure, can elongate from the occiput to the chin, at the same time that it is flattened from one parietal bone to the other; and we have seen the parietal diameter reduced to two inches and seven lines.” — (Chaussier.)

“Ut idem caput nixibus, ac pelvis renisu, ossiumque bregmatis precipue mollitie, mobilitate, eorumque reciproca susceptione in acumen desinat, atque, ut in omni pelvis regione oportet fieri, ab una ad aliam plagam informam cogatur minorem, aliaque extenuetur in majus.” (*Doctoris Lucæ Johannis Boëri naturalis medicinæ obstetriciæ Libri septem*. Viennæ, 1812: p. 441.)

“Nature, in forming the head of the fœtus of flexible pieces, intended to facilitate parturition. These pieces, being separated by unossified and membranous intervals, allow the bones to slide over each other, and thus the whole head is in a measure reduced, and slides through the narrow outlet of the pelvis.” — (Richerand, *Physiology*.)

In order to fix my ideas on the changes, which the head of the infant is susceptible of experiencing by compression, caused either by the pelvis or the forceps, I have, as I am always accustomed to do, shut up my books and consulted nature. In presence of M. Darnecy and others, we made experiments on the heads of new-born infants that were well formed. After having removed the hairy scalp, we compressed them in every direction, with a very considerable force. Finally, we compressed the cranium with so much force by means of forceps, that the blood transuded through the pores of the bones.

In eight heads submitted to our experiments, seven exhibited not the least trace of overlapping. One only manifested the following phenomena:—

When the forceps was applied in the longest diameter, that is to say, from the forehead to the occiput, and when a strong effort was made, the superior part of the os occipitis glided under the posterior borders of the parietal bones to the extent of nearly two lines. This certainly is not the *overlapping* of which accoucheurs speak.

The greatest diameter of almost all the heads of new-born children is not in the protuberances or points of ossification of the parietal bones which do not yield to any force, but below and a little in front of these protuberances, nearly in the inferior part of these bones. Now, when we applied force to this part, it became depressed. The same thing happened when force was applied to the superior part of the frontal bone, or on the anterior superior part of the parietal bones. A depression of the inferior middle part of the parietal bones pro-

succeed. The entire form of the head results from the form of each of the bones of the cranium ; and the form of these bones cannot be altered by compression or malaxation.

If, however, the violence that is used be too great, the osseous laminæ might be bent and depressed, and in this case, the child will be destroyed, or remain imbecile during life. But all the cranial bones are still very elastic in the new-born child. The moment the pressure ceases, they resume their original form. In those cases even, where they have been so pressed that their proper elasticity is not sufficient to restore them to their first form, the brain re-acts upon them ; and when this has not been essentially injured, their primitive form is reëstablished at the end of a certain period, sometimes only after many years. The same thing happens, when the bones of the cranium are depressed by the narrowness of the pelvis, or, by the application of instruments.

duced a swelling of the superior parts of the head, and *vice versâ*, but in no instance did the head assume a pointed form. If the pressure, in whatever region applied, is too strong, the brain is crushed, and extravasations of blood take place, especially from the great sinuses.

There is a great difference between the trifling *overlaying* which I have just described, and that extreme sliding of the bones over each other, which causes the head to assume a pointed form, and glide in a manner across the narrow passage of the pelvis ; which necessarily supposes a considerable reduction.

In the whole length of the suture of the parietal bones, the edges of these two bones are not in the same plane, but one rises above the other. In touching the head, this anatomical configuration might be easily mistaken for an *overlaying*. Hence, I believe, arises in part the mistake of the accoucheurs.

In those cases, where a violent pressure is occasioned, either by the use of instruments, or by the narrowness of the pelvis, certain regions of the head may be considerably depressed ; but then greater or less injury happens to the child.

I have further observed, that very small heads, where the bones are extremely flexible, sometimes suffer the most, so much so, that occasionally even the death of the child ensues. This is an important circumstance in legal medicine ; and those who have to decide on presumed infanticide, cannot bestow too much attention upon it.

The Influence of the Brain upon the Cranium from Birth to adult Age.

A short time after birth the bones of the cranium grow hard; they lose their flexibility, unite by their edges; the membranous intervals, the *fontanelles* ossify. Is it possible, in these circumstances, that the brain should be able to imprint its form on those bones which have become hard? Let us first examine what happens to the cerebral mass, as a whole, and to the cavity of the cranium. After this examination we will pass to the consideration of the development of the cerebral parts, in particular, and of the changes which this development produces on the cranium.

The brain of a child two years of age evidently has more volume, than that of an infant just born or even a year old.

Compare the head of a new-born child (Pl. XII.) with the head of a boy of two years (Pl. XXXVII.), and that of a little girl of six years (Pl. XXXVIII.), and these two last with heads (Pl. XXXIX. XL.) of adults. The head of a new-born child is from thirteen to fourteen inches in circumference; those of adults are from twenty to twenty-one inches and a half. The brain of a boy or girl is larger at ten years, than it was at two or six, &c. The cerebral cavity, and consequently the whole contour of the head, enlarges in the same proportion as the brain increases in size; and this simultaneous enlargement continues so long as the head grows. This fact sufficiently shows that the cranium yields constantly to the brain, which augments in volume; and, as the bones of the cranium are very thin until the age of puberty, hardly half a line in thickness, it follows of course, that the external outline of the cranium is precisely similar to the surface of the brain.

The thickness of the cranium represented in Plates ix. and xii. is the ordinary thickness in adult age, that is to say, from one to two lines. We see farther in these same plates, and by Plates viii. x. and xi. that the brain, in the whole of its outline, is exactly applied against the internal surface of the cranium; for, in a state of health, the intervening membranes are not to be considered.

In examining the internal surface of the cranium of a subject, who has not died of a chronic cerebral disease, we shall observe that the great blood vessels of the dura-mater are very exactly impressed upon it; we see also there the impressions of the pretended glands of Pacchioni, and the returning sinuses. Even at this age the convolutions are found very distinctly impressed on the inferior table of the orbital plate, the inferior anterior part of the frontal bone, and in the temporal bones. When from any cause the membranes of the brain become thinner than natural, we then distinguish the impression of the convolutions on the whole internal surface of the cranium. I make one observation, in passing, that in the majority of hydrocephalic subjects we find the hairy part of the head covered with a furfuraceous exanthema. For example, in the hog, goat, roebuck, stag, sheep, ox, cat, dog, marten, polecat, the smaller phoca, ape, &c.

Some physiologists have thought, that the enlargement of the osseous box was caused by the pressure, which the brain exercises on the internal surface of the cranium; but there does not exist in living organization any like mechanical action. There is continual absorption, secretion, nutrition, decomposition, and new formation. The osseous molecules are absorbed, and others are secreted in their place; and so long as the brain and the cranium have not acquired their maximum of growth, secretion is more considerable than absorption. New juxtapositions take place in consequence of the same laws, that were fol-

lowed in the formation of the bony osseous laminæ in the fœtus, that is to say, that the contours of the brain constantly follow.

Hufeland and Fodéré set out from this same mechanical point of view, when they say, that in countries where the inhabitants carry considerable weights upon the head, the cranium ought to be compressed inward, and consequently the organs situated at the superior part of the head, depressed.

But, supposing even that the brain exercises a mechanical pressure against the internal surface of the cranium, as may really happen in the case of hydrocephalic patients, who grow rapidly, we must not forget that the brain acts on the concavity of the vault, and the compressing weight of the convexity; but every one, who has the least idea of the theory of the arch, or even any person who has only attempted to crush an egg in the hollow of his hands when joined together, it being placed in the direction of its longest diameter, can easily conceive what resistance the arch of the cranium is capable of opposing.

I pass over in silence the objections, that others have urged against the idea of Hufeland and Fodéré. For the rest, we have found in the form of the head of the inhabitants of these countries, as great diversities as in that of other men. We have found in them the organs of firmness, of pride, &c., placed near the top of the head, as strongly developed as in other people.

We are told that certain savages of America apply to the forehead of their children little flat plates, by means of which they depress the superior part of the frontal bone.* As M. Spurzheim has had better opportunities than myself of making observation on this subject, I will transcribe here what he says in relation to it.

“I have seen seven crania of Caribs; they have

* Dict. des. Sci. Med. tom. xxi. p. 268 et suiv.

very little elevation, and are particularly expanded in the temporal region, but on comparing one with another, I find as great a difference as is usually observed in comparing an equal number of European crania.

"I have seen European crania much less elevated; consequently the want of elevation in question cannot be owing to mechanical depression alone. The surface of the crania of the Caribs, was even more or less developed, and consequently manifested in no part the impression of a plate. It seems to me, that all that is related of the method of flattening heads, refutes itself. It would require a very considerable force to compress the cranium and brain; but this force cannot act from above downwards, unless it is opposed by an equal resistance from below upwards, or in some other direction; but, if the pressure from above downwards produced any effect whatever, the resistance from below upwards, or in any other direction, ought to produce an equal effect."

Since the publication of the first edition of my work, I have conversed with many people who have been at the island of St. Vincent; but their reports are contradictory, and do not clear up my doubts. "Some say that they leave this plate on the head of the infant six weeks; others pretend that it is left there, six months; and others say, two years," &c.*

In those Caribbean crania, that we saw in the possession of M. Blumenbach, where the anterior part of the forehead is forcibly depressed, the orbits have the same depressed form, which they assume in hydrocephalic subjects from the pressure of the water.

Is the brain of the Carib more naturally developed in the temporal region, and towards the base of the brain, or is this form artificial? This, according to the observations of M. Spurzheim, can hardly be admitted. There must have been then, in this case, permanent action by a hard and inflexible body; an ac-

* Phys. Sys. p. 220.

tion which cannot be compared to any other influence from without. After all, we are very far from applying craniology to deformities resulting from violence.

Up to this point I have heretofore left the question undecided. But I have since found in Lafitean, a passage which appears to me conclusive; it is this: "Some tribes in the vicinity of Louisiana, who are called by the French, Flat-heads, because they deem a flat forehead a mark of beauty, and have the summit of the head terminating in a point like a mitre, have cradles nearly similar to those I have just described, but besides this have something particular to cause them to assume this form, which they find so agreeable. It is a hole made in the cradle, in which the mother places the head of the child, applying to its forehead and the top of the head, a mass of clay, which she presses with all her strength. She repeats this application to the child's head every night, until the bones of the cranium have acquired sufficient consistence. Children suffer extremely in the first attempts of this violent operation, which causes them to turn black, and there runs out from the nose, the eyes, and the ears, a white and viscous fluid. They afterwards suffer much from the uncomfortable situation, in which they are obliged to pass every night of the first months of their infancy. But this must always happen to those who would be beautiful by art, and who wish to have charms that nature has denied them.

"The Caribs, and most of the southern savages, have the forehead flattened, and the head pointed. Their mothers take care to press it in with little flat plates, and small cushions of cotton firmly bound to the back of the head. But the children have no other cradle but little hammocks, proportioned to their size, which their mothers can suspend, and carry very conveniently, and in which the infants are placed entirely naked without any constraint. The savages, who are called in Canada, 'People of the earth,'

or the *Parhagonronnon*, have quite a different taste, for they consider beauty as consisting in a round head. On this account they are called 'Round-heads.'” *Customs of the American Savages, &c.*, by Father Lafitean, Vol. I.

The Influence of the Development of individual cerebral Parts on the Form of the Head.

It has been demonstrated, in another place, that the development of the different cerebral parts is not simultaneous. Now, if it be true that the cranium is moulded upon the brain, I ought to be prepared to follow the successive developments of the cerebral parts, by means of the changes which take place in the cranium. Let us see if experience will still confirm my doctrine. The new-born infant remains, for some time, a stranger to the external world. Its life is scarcely more than vegetative, he passes it in sleeping and sucking. The part of the brain, situated in the anterior superior regions of the forehead, appears to the eye a mere reddish pulp.* But, at the end of some weeks, the nervous fibres are more and more apparent. The child begins to be a citizen of the world. At the end of nearly three months the middle and anterior superior parts of the forehead, until now perpendicular, or flattened backwards, begin to swell out. (Pl. xli.) From this period, the child observes and regards with attention all objects in his way; he compares them with each other; the extent of his knowledge, acquired in a few years in relation to the world without him, is enormous, and he astonishes us with his questions and observations. But later, these frontal parts, in most individuals, put

* I only speak here of a brain that has undergone no preparation. I am not ignorant, that when it has been macerated in spirits of wine it manifests a fibrous structure.

themselves in a sort of equilibrium with the other parts of the brain, and the little prodigy resumes his place among ordinary people.

Let any one compare the forehead of a new-born child, with that of one from one to ten years of age; provided the individual that is observed, is not condemned by nature to a lamentable mediocrity, he will find that in the early months the forehead is small, narrow, short, and nearly perpendicular; but departing from this epoch, it dilates in all directions, and especially forwards; at a later period still, it loses its convexity, so much so as to recede in many subjects. Then it follows, that the form of the head undergoes the same changes, as the cerebral parts situated against the forehead.

The inferior part of the occipital bone undergoes also the most marked changes. The cerebellum is placed in the two occipital fossæ. In the new-born infant it is very slightly developed, in comparison with the rest of the brain; the cranium is contracted in this region, resembling a truncated cone; the external prominences, corresponding to the occipital fossæ, are small, flat, and almost imperceptible; the two mastoid processes are still very near each other, &c. (Pl. xli. fig. 3.)

But mark the difference in the boy of twelve years! The occipital fossæ are distinctly observed externally by their protuberances; the mastoid processes are much further separated; the posterior base is much larger, &c., and this because the cerebellum is now much more developed in comparison with the other parts of the brain. (Pl. xlii.)

Finally, in more mature age, when the cerebellum has acquired all its development, the prominences, corresponding to the occipital fossæ, are much larger still, so that, in this state of things, the base of the cranium, taken from one temporal bone to the other, almost equals its diameter. (Pl. xliii.)

But that which takes place in respect to the cere-

bral parts, of which we have just spoken, and their corresponding regions on the cranium, takes place also in the same manner, at the time of the marked development of the other cerebral parts, and as, at the age in question, the cranium is still sufficiently thin, hardly a line in thickness, and in many places much less, we can recognise, with certainty, the form of the brain by the external form of the cranium.*

Coincidence of the Surface of the Brain with the external Surface of the Cranium, in mature Age, as far as Organology is concerned.

It is hardly possible to determine with exactness, either the period of maturity, or the duration of the mature state of the brain. There are some individuals who arrive much sooner to this state than others. The brain of most men hardly acquires its ultimate development till the age of thirty, often even not till forty. After the definitive development of the brain, the cranium thickens by degrees, and in the following manner.

The bones of the cranium are composed of two solid osseous laminæ. One of these laminæ covers all the external surface; the other forms all the internal surface; the interval between the two laminæ is filled with a cellular substance (the diploe); this substance is not of a uniform thickness throughout, so that the two tables are more separated from each other at certain places, than in others. (Pl. VIII. x. xi. xii. xiii.)

Thus then, although the internal surface of the cranium is exactly moulded on the surface of the brain, from the moment when the cranium has acquired a certain thickness, it cannot be asserted without quali-

* All that I have just said of the development of the brain and cranium in our own species, equally takes place in the mammalia and birds.

fication that its external surface exactly represents the convolutions of the brain. For, if we take a cast both of the internal surface of the cranium and its external surface, we shall see that the first does not correspond exactly to the second; hence, the inference that is drawn from the external surface of the cranium, as determining the form of the brain, must be false, and consequently craniology would be, at least in the mature age, a very precarious means for determining with exactness the degree of development of the cerebral organs. (Pl. VIII. X. XI. XII.)

Hufeland, Walter* of Berlin, Rudolphi, and a host of writers who have copied these learned men, have seized upon this fact to prove the fallacy of craniology. Walter even flatters himself with the idea that by this argument, he has destroyed the doctrine of the functions of the different cerebral parts.

In order to show my readers how little solidity this objection possesses, I shall give here the view taken of it by MM. Berard and De Montégre. "Is the cranium the exact and faithful image of the external figuration of the brain, and can we always, in the most rigorous and precise manner, deduce the form of the one from that of the other? If we examine the relation of the cranium to the brain, in all vertebrated animals, especially in man, as affected by differences of national character, as well as by those equally certain, but more delicate ones of age, sex, individual peculiarity, &c., we shall be easily convinced that the cranium generally represents the brain. This opinion, incontestable in this point of view, if it be taken in its details and in its minute application, ought to be limited by the following considerations, the most of which are admitted by craniologists."

"1. The frontal sinus, in certain animals, as the carnivorous, swine, some of the ruminating, especially

* Et was über die Schädellehre, that is to say, a treatise on craniology.

the elephant, &c., so bulges out the anterior wall of the cranium, that here we cannot judge of the brain by the cranium. Further, in individuals of the same species these sinuses may be more or less capacious. 2. The orbits which correspond in part to the brain may be more or less deep, more or less open in the same individuals. 3. The base of the cranium may be more or less projecting, more or less flattened. 4. The walls of the cranium may be more or less thick. The Egyptians, according to Herodotus, had much thicker crania than the Persians. Haller has seen a woman whose cranium was so thick, that it required eight minutes to open it in the operation of trepanning. M. Gall believes he has observed that suicides, and other maniacs, often present this peculiarity of organization. The same observer has seen that, in old age, the external table maintains its previous configuration, while the internal one follows the diminution of the brain. 5. The cranium is not uniform in its thickness, its walls are enlarged in certain points, and are raised into eminences; these eminences may vary according to the species and the individuals, even according to the exercise of muscles that are attached to them; although we should not give to this last circumstance too great a latitude, nor understand it in such a mechanical manner as some physiologists have done.”*

The circumstance that the two tables of the cranium are not parallel in their whole circumference, and at all periods of life, would certainly be of the greatest importance if I had ever pretended to judge of all the minute shades of difference that exist in the convolutions of the brain, as well as of the differences of detail, which result from these in the exercise of the cerebral functions. But, on the contrary, I have endeavoured to render my hearers and readers acquainted with all the circumstances in question.

* Dictionary of Medical Science, vol. vii. p. 30.

Have I not spoken of the frontal sinus, as well in man as in animals, for instance, in the elephant and the swine; of the separation of the two tables of the cranium in owls, or rather in nocturnal birds; and in general, of the causes of the different forms of the orbits? I have, in my public lectures, insisted on all these points. My pupils, in their writings which they have published in relation to my doctrine, have also insisted upon it. I have insisted upon it in my article *Cranium* in the Dictionary of Medical Science. I was the first to maintain, that it was impossible for us to determine with exactness the development of certain convolutions, by the inspection of the external surface of the cranium. I was the first to treat in detail of the variations in the thickness of the cranium which happen in old age, in insanity, &c. I was the first who remarked, with extreme care, that in certain cases the external table of the cranium is not parallel to the internal one. I have called the attention of anatomists to all these circumstances. What is it then that has incited Messieurs Berard and De Montégre to turn these facts into weapons against craniology? Why had they not the frankness to instruct their readers by what means I have been enabled to remove many of these difficulties, and how I have derived advantage from others? Ought they not to have borne me testimony, that I pursued my researches with as much candor as coolness; that I considered my subject, in all its aspects, with impartiality?

Messieurs Berard and De Montégre thus continue: "6. The arteries, the veins, and especially the sinuses form, between the cranium and brain, a sort of layer sufficiently extensive to separate the one from the other, and prevent their reciprocally moulding themselves on each other, at least in the ultimate details of organization. These vessels cause the grooves and all the impressions, which mark the internal face of

the cranium, and which have been improperly referred to the cerebral convolutions; since a more attentive examination has demonstrated that the former do not correspond to the latter. Thus, the external face of the cranium does not represent the internal in its details, and this does not represent the brain, strictly speaking. The vascular layer, interposed between the brain and the cranium, would tend, on the contrary, to act on the two parts in an inverse sense; so that an elevation on the cranium would correspond to a depression in the brain, if the external face of the osseous envelope followed the internal with more precision.”*

I have never before heard of a single anatomist, who has confounded the impressions of the sanguinous vessels upon the internal surface of the cranium, with the impressions of the convolutions of the brain. The marks of the large sinuses, for instance, behind the petrous portion of the temporal bone, those at the superior part of the falciform process, &c., have never been represented by any one as the impressions of convolutions.

But, on the other hand, there never has existed either anatomist or physiologist, who has not recognised the impressions called *digital* on the superior face of the orbital plate, as well as those in the inferior anterior part of the frontal bone, those in the temporal bones, &c., for true impressions of convolutions. I have been tempted many times to believe, that Messieurs Berard and De Montégre have never had either a cranium or a brain in their hands.

“7. When,” they add, “after having removed the cranium, we examine the brain covered by its membranes, we see that its surface is smooth and uniform, the dura-mater not following the sinuosities of the convolutions, which is another proof that the cranium does not in all its parts receive the impressions of the brain.

* Dictionary of Medical Science, vol. vii.

It is in fact incontestable, that the cranium does not follow the brain in these deep sinuosities; that we are obliged to remove the membrane before we discover it. The cranium then only receives the impressions of the great eminences of the brain, which are well expressed in the frontal and occipital projections, &c. But as to details, and especially such minute ones as those that craniotomy supposes, it appears to us that the cranium cannot express them."

It is true, that, after the cranium is removed, the prominences of certain cerebral parts do not appear such as they are impressed on the cranium. Is it astonishing that the brain, so long as it is covered by its osseous box, sustained and supported on all sides, should sink down and flatten in some measure when this support is removed? But it is by no means true to say, that in this case, the great protuberances flatten entirely. Messieurs Berard and De Montégre, while making the following observation, ("It is, in fine, incontestable that the cranium does not follow the brain in these deep sinuosities, which cannot be seen but by removing the membrane,") seem to give the reader to understand, that I have maintained, that the cranium does follow it; but I have never maintained any thing like it; and this exact opposition of the cranium to the brain is entirely indifferent, as far as craniology is concerned. Have I not, on the contrary, at all times declared myself the opponent of those who admit an indefinite number of organs, and who are afraid of finding the cranium too small to contain them?

As to the "minute details that the cranium cannot express," I have to observe, that these gentlemen were present at many of my public lectures, where I established what we were enabled to ascertain by the cranium; but I will hereafter return to this subject. A critic, who, in order to combat his adversary, is obliged to attribute to him opinions contrary to those which he professes, betrays the weakness of his

own arguments. "The Cranioscopists," add these gentlemen, "should follow in the brain, the organ which they believe they see in the cranium." Wisdom herself could not give better advice; but have we not followed it a long time, before MM. Berard and Montégre have given it to us? Those who have been present at our lectures, can recollect that we have repeatedly shown our auditors, in the brain, an organ which was designated on the cranium. They cannot be ignorant that at Paris, we have, in the presence of many witnesses, made researches on the brains of some men of eminent talents. But I could wish that they were ignorant of this. By what right do they suggest to their readers, the idea that men, who, during a long series of years, have devoted themselves to the study of the functions of the brain, with an indefatigable zeal and a love of truth, superior to all obstacles, have neglected to observe so necessary a condition? How many times have I repeated to them, that, after having ascertained the place of an organ on the cranium, we have followed this organ in the brain; and that we have found the forms of the cerebral convolutions corresponding to the protuberances of the surface of the cranium?

"Finally, we shall remark," conclude MM. Berard and De Montégre, "that had cranioscopy a much greater extension, than we believe ought to be allowed it, it would require a very delicate and practised tact; that there would be very few competent judges in this matter, and, at the same time, error would easily enter into all considerations on the subject."

I am convinced, that, to speak correctly of organology and cranioscopy, it is necessary to acquire a knowledge of it by a long and practical study. But it is not less certain, that those only who have fulfilled this condition, have the right to establish themselves as judges with the public. I shall attempt now to answer the objection of the want of parallelism between the two tables of the cranium.

I have never pretended to distinguish the influence, which modifications of the forms of the cranium, slightly marked, may have on the character, or how its corresponding shades may be traced.

My first observations have only been made upon persons, who were distinguished from other men, by some eminent quality or faculty. I easily perceived that it was only in such individuals, that I could find striking differences of the head, and that I could distinguish well-marked protuberances. I had not then, in the examination of heads and crania, any other object than to discover the external marks, which indicate qualities or faculties eminently distinguished.

But, it is certain, that the want of parallelism in the two osseous tables of the cranium is not, in the state of health, or previous to old age, an obstacle which prevents the observing of the marked development of certain cerebral parts. To convince my hearers, I showed them crania sufficiently thick; for example, those represented, Plates VIII. x. xi. xii; then I directed their attention to the cerebellum, and I caused them to observe its slight development, as in Plate x. fig. 47, 48; its moderate development, as in Plate xi. fig. 47, 48; and its very great development, as in Plate VIII. fig. 47, 48. I demonstrated also the greater or less development of the posterior lobes of the brain, immediately above the cerebellum. These posterior lobes are, for instance, much less developed, Pl. xi. fig. 48, 49, and Pl. VIII. fig. 48, 49, than in Pl. x. fig. 48, 49, and Pl. iv. ii. fig. 28.

Who will venture to assert, that, with similar organs, the want of parallelism of the tables can lead to error? Generally, I demonstrated the same thing in regard to the two organs situated on the superior part of the head; that of benevolence, and that of firmness. I commonly demonstrate the same thing also with regard to the organs of architecture* and number, when

* Constructiveness.

they have acquired a marked development; but these two last are among the smallest. These demonstrations convinced all my auditors, that the want of parallelism in the two tables, when it occurs, does not in the least degree invalidate cranioscopic examination. In treating of the fundamental powers and their organs, I shall apply these considerations to each organ in particular.

For want of a sufficient number of facts, I cannot decide the question, whether, among certain races, the crania are thicker than in others. The crania of Negroes are often thick and heavy, but I have some in my collection that are thin and light. The crania of the Greenlanders and the Esquimaux, which are in the collection of M. Blumenbach, are thin and light. According to Herodotus, the crania of the Egyptians were thicker than those of the Persians. Sometimes the crania of men of very limited capacity are exceedingly thick, even when this condition is not the result of advanced age or mental disease. Similar crania are useful for physiology generally, but they are of no service in craniology. M. Hufeland fears, that by and by, we shall discover so many organs, that the cranium cannot contain them. I shall refer this question to the section on the primitive powers.

This philosopher is deceived, in affirming that I regard each convolution as a particular organ. I have never taught this; even if such were the case, it would not be impossible to recognise, on the external face of the cranium, the extraordinary development of certain convolutions. It is true that the investigation would be more difficult, if many neighbouring organs had acquired at the same time a great development. But however this may be, every individual cannot become the object of useful craniological observations.

I observe finally, that all the objections, and all the doubts of my adversaries, have a radical defect. Craniology and organology are experimental sciences.

Why do not my adversaries commence by repeating the observations that M. Spurzheim and myself have made? Why do they not collect facts, rather than oppose me by subtilties drawn from their own method of considering the powers of the mind and animal organization? I myself formerly believed in the commonly received ideas, but the power of facts has constrained me to sacrifice to truth, the knowledge which I derived from the school, and this mania of explaining every thing, for which I had contracted so strong a habit. The naturalist, above all, is the slave of nature; he ought to know what is; afterwards he can give himself up to his vain desire of knowing why, *what is, is, as it is.*

*Observations on the Examination of the Heads and
Crania of Animals.*

In order to extend to animals, the observations which in man allow us to interpret the forms of the cranium, it is necessary to make a particular study of the structure of the heads of different species. We cannot give a general rule either for the mammalia, or for birds; nor for amphibious, frugivorous, or carnivorous animals. In certain species, age produces an essential change. Among fish, tortoises, &c., we cannot absolutely determine the form of the brain by the external configuration of the cranium.

Among certain animals the head is scarcely more covered with muscles than in man; others, except in certain regions, have the whole head furnished with strong muscles. In some species the frontal sinuses are wanting; in others the cellules, between the two osseous tables, are continued not only into the frontal sinuses, but extend through the whole cranium, even to the horns. In other species cells only exist in one part of the cranium, but these, it is true, are quite extensive. In birds the cerebellum only occu-

pies the median line of the occipital bone, its lateral parts are entirely occupied by the auditory apparatus. In some animals the cerebellum is covered by the posterior lobes of the brain; in others it is placed behind these lobes.

In nocturnal birds, the two tables of the cranium are considerably separated from each other, and the interval is filled with a very light cellular substance. In some species the osseous tables are parallel, although somewhat distant from each other; in others their direction is entirely different. In dogs we observe, both as respects the muscular mass, the frontal sinuses, and the crown (*crête*), a great difference not only in different varieties of the same species, but even between individuals. Some dogs are entirely destitute of frontal sinuses; others have them very large, as the wolf and hyena. The cat, the marten, the squirrel, the horse, the ape, are also destitute of frontal sinuses. The ox, hog, bear, elephant, &c., are provided with them.

In a word, the crania of animals require a particular study, in which we should never lose sight of the principle, that it is only that part of the crania of animals, the form of which is determined by the brain, that is important for organology. A collection of crania derived from animals, which have been known during their life, and which have been studied from their early life upwards, is the more instructive, as it enables the observer to judge, that the great difference found in individuals, as it respects their qualities and faculties, cannot be accounted for by accidental causes, and must be wholly owing to original organization.

Of the influence of the Brain on the Forms of the Cranium in the Decline of Life.

At the approach of old age, the whole nervous system begins to lose its plenitude, and consequently its activity. In all parts of the body the nerves shrink, the cerebral convolutions contract and flatten; plane surfaces and small hollows form on their prominences; they separate from each other; the intervals, (anfractuositities,) that they leave between them, increase; in a word, the whole brain diminishes.

Does it happen by this diminution of the brain, that a void space is formed between the brain and the internal table of the cranium? In opening the heads of very old subjects we do not perceive this. Let us see what experience teaches us.

It most frequently happens, that the crania of old men are thicker and lighter, than those of adults or young people. When I publicly announced this proposition, I was opposed by those physiologists, who are accustomed to anticipate experience by reasoning: they said that I was very bold, to maintain such absurdities before physicians and enlightened anatomists. Do not all the bones of the body (said they) diminish in advanced age? Do not all the bones become thinner? Why should the cranium be an exception?

I myself had believed as others did, and I was not a little astonished at first, to find that the contrary usually occurred. I multiplied my observations. I collected from cemeteries, museums, and charnel houses a great number of crania, the worn up jaws of which proved that they belonged to very aged subjects, and my early observations were in almost every instance confirmed.

Finally, I saw what Voigtel asserts in his *Manual of Practical Anatomy*,* “that the bones of the crania of

* Handbuch der practischen Anatomie, p. 274.

very aged people are often thick, light, and spongy." Walter himself, who has declared with so much warmth against my assertion, describes in his *Museum Anatomicum*,* the head of a man of upwards of sixty years, the bones of which had become thick, light, and of very little consistency; and the head of a woman of more than eighty years, the bones of which were thick, spongy, and so light, that the whole head only weighed fourteen ounces and a half; all the sutures were ossified. The external surface of both these heads was in a natural state. Bichat also records this case as being a common one. "The vault of the cranium acquires," says he, "a considerable thickness; we observe that this thickness, always increasing, offers an exception to the other bones, which become smaller." †

It is then certain, that there is deposited between the two tables of the cranium a certain amount of spongy, osseous matter, and that these tables gradually separate. Does the external table separate outwardly, and allow the cavity of the cranium to preserve the same capacity? or does the internal table encroach upon the cranial cavity, so as to diminish its extent?

If the external table separated outwards, the head at a very advanced age ought to become considerably more voluminous; we do not observe that this takes place. But, in conformity with the laws of organization, the internal table ought to follow the brain in its collapse; the osseous substance, as it is gradually deposited, ought to mould itself upon the brain, as in its primitive formation, at the time of the ossification of the cranium in the fœtus. In this manner the capacity of the osseous box lessens, in proportion as the brain, which it covers, occupies less space.

The examination of similar crania enables us to see distinctly, that the internal table separates inwardly,

* Ibid. Vol. ii. No. 375, p. 36.

† Tom. i. p. 58.

and there is no fact that induces us to believe, that the external table is changed from its original direction. In those places where the brain is most sensibly depressed, we often observe thick depositions of osseous matter. The occipital fossæ become less deep, and their sides less transparent; the *spina cruciata* becomes more prominent within, and more strongly marked; the petrous bones grow thicker; the fossæ for the middle lobes of the brain, contract and lose their depth; the prominences of the *sella turcica*, by the apposition of new osseous matter, become thicker and more obtuse, &c.

What M. Richerand says, is not exact, viz., "If the bones of the cranium make an exception to the general rule, and become sensibly lighter, it is because the continual movements of the brain wear them up, and destroy them on their internal surface;" and in another place he says, "the bones of the cranium become so thinned by internal wearing, that the pulsations of the brain become sensible through the hairy scalp."

When, finally, at the most advanced age, the brain falls into such a state of atrophy, that the old man sinks into idiocy, all the changes in question become much more evident. Sometimes the internal table manifests the appearance of having had patches of osseous matter confusedly deposited upon it. The places where, in adult age, the frontal sinuses are usually found, protrude inwards; the sinuses enlarge; and, finally, the superior internal table of the orbital plate separates from the inferior one. (Pl. xxxvi. fig. 4, 5.) At first the orbital plate appears only to thicken; but soon there is a hollow formed between the two tables, which is sometimes nearly an inch in height. We can demonstrate mechanically, that the cerebral mass has contracted nearly an inch from the anterior and inferior frontal part of the cranium only. (Pl. xlv.) And yet, notwithstanding all these phenomena, no one is willing to admit that the brain di-

minishes in advanced age ! There are found among the ancients some passages, which prove that this diminution of the brain in old age, was not unknown to them. As I have said above, in this state of things the convolutions separate from each other. This separation might have caused M. Portal to believe, "that the convolutions are deeper in old men than in adults."

In some cases, but less numerous than the preceding, the cranium becomes thinner in old men. The internal table follows the brain inwards ; but, as there is less of the spongy mass deposited between it and the external table, the outer follows the inner ; in these cases, the external circumference of the head must necessarily diminish. Such crania are also much lighter than crania of equal dimensions and equal thickness in younger subjects.

Sometimes, in extreme old age, the cranium at first greatly thickens and becomes very spongy ; afterwards the external table is absorbed, as well as the spongy mass underneath it ; but it is never renewed. This absorption generally commences in the parietal protuberances, so that deep oval depressions are found there. In looking on the inside of the cranium we find it uniform, and, where the cranial walls are the thinnest, they appear transparent. At last other parts are equally absorbed, and the cranium, in certain places, exhibits the appearance of impressions made with the fingers in a mass of wax ; in others, that of a piece of parchment puckered by rapid desiccation. In certain places, the bones have at most the thickness of a sheet of paper ; in others, they are still from four to eight lines thick. (Pl. XLVI. XLVII.) We observe on the internal surface of the base of the cranium all the thickenings above described.

Let me observe here, that, in this condition of the cranium, a slight pressure is sufficient to depress it in its thinnest parts. This circumstance is important in

legal medicine. After what I have just said, we can easily conceive, that, in the decline of old age, crani-
oscopy can at least determine what was formerly the state of the brain; but, on account of the unequal thickness of the cranium, it cannot pronounce with accuracy on the actual condition of the brain.

Answers to some Objections against the Influence of the Brain on the Form of the Cranium in a State of Health.

Ackermann pretended, that the variations in the form of the cranium, were occasioned by the air which penetrated into the osseous cells. Ackermann is dead, and I doubt whether any one has espoused so erroneous an opinion. Besides, I have destroyed this objection in my answer to the refutation of craniology by Ackermann. M. Spurzheim has also refuted it in his *Physiognomical System*.

If I except some naturalists of the first rank, as Sæmmerring, Cuvier, &c., physiologists and naturalists generally believe, with the respectable M. Hufeland, (who, however, does not exclude the action of the brain,) that the muscles, by the tractions and pressures which they exercise upon the cranium, contribute greatly in determining the form of the head, and that consequently we may greatly deceive ourselves in considering the prominences of the head or cranium, as produced by a considerable development of certain cerebral parts.*

However specious this objection may seem at first sight, it fails altogether when submitted to a serious examination.

1. Physiologists who bestow so much importance on the action of the muscles, are divided into two

* MM. Dumeril and De Blainville maintain the same opinion in their lectures.

sects; and the opinions of the one are in contradiction to those of the other. Some pretend that the action of the muscles produces the eminences. Others maintain that the muscles ought, by their action, to flatten or depress the places on which they act. Which sect is right? They are both wrong.

2. Before the animal or man has left the uterus, the form of the head of one fœtus differs from that of another, and the form of each head already indicates certain leading forms of some cerebral part. In the fœtus the muscles have not yet acted. Furthermore, both in animals and in our own species, the face and the muscles of the head, for a long time after birth, and even to the period of the development of the teeth, are very small in comparison with the osseous box that contains the brain, which, as we have above seen, in proportion as its different parts are developed, acts constantly on the cranium to modify its form.

3. Most of the prominences which indicate organs, are placed on regions of the head on which no muscle acts, or which are only subject to the action of very feeble ones. The little prominences of the organs at the inferior part of the forehead, the more considerable projections on the anterior superior part, and the superior part of the frontal line, those from the summit of the head to the inferior part of the occipital bone, finally, those also of the parietal bones, cannot result from the action of muscles; for, all these regions are only subject to the action of the subcutaneous muscle, which, if it is absolutely necessary to admit its action on the cranium, would manifestly tend to level and give it a uniformly round appearance in every direction. Where is the physiologist, who would attribute to the action of muscles, the great prominences on the superior part of the forehead, where there are some important organs? the prominences on the summit of the head, of the parietal bones, of the posterior lobes of the brain, or of the superior part of the occipital bone, or the straight crests which are found

on the heads of many animals? If there were muscles attached to these prominences, as for example, to the osseous crests in some animals, these muscles could never produce an action from below upwards; they should, on the contrary, draw the osseous prominence from above downwards, or still more, backwards. So the great prominence at the superior part of the occipital bone, which corresponds to the organ of love of offspring in woman, ought not to be drawn backwards, but from above downwards.

4. In the region where the masticating muscles are attached, many very prominent and strongly defined organs are presented. M. Hufeland thinks, that, in many instances, these prominences can only prove that the individual, to whom they belong, is endowed with a strong power of mastication. Shall we always reason thus, or shall we observe facts! M. Hufeland is not ignorant, I believe, that generally we attribute to Negroes much stronger masticating muscles than to Europeans; well! Negroes have this region flattened. Have not other physiologists failed to mention that this flattening arose from the action of the masticatory muscles, so energetic in Negroes? Many animals, endowed with remarkably strong masticating muscles, such, for example, as the hyena, the bull-dog, the lion, the tiger, have not, by many degrees, this region of the cranium so much developed as some men, as many species of monkeys, as the little seal, the otter, the eagle, and even the wren; however, these last animals have extremely feeble muscles in the region of the cranium in question. And how can it be explained, that these prominences have so different a degree of development in men of nearly equal muscular power? How happens it that, in many heads which are in my collection, and which were taken from strongly muscular men, the organs are much less developed than in some other heads, which belonged to women of a delicate constitution?

5. If the prominences of the cranium were owing

to the action of the muscles, they ought to assume the contours of the attachment of these muscles; but none of the prominences, which I regard as the indices of an organ, are in this condition. All correspond to the form of the cerebral convolutions, which constitute the organ of which these prominences are the sign. I shall prove this hereafter, in treating of each organ in particular.

6. If the muscles drew the bones of the cranium outwards, they ought necessarily to act with more force upon the external table, and separate it from the internal. But it is exactly there, where the strongest muscles act, (for example in the temporal region, and in that of the occipital fossæ,) that the osseous plates are more closely in contact, that the cranium either juts out, or retreats. There, on the contrary, where the weakest muscles act, the laminae are more separated, and it is never the external table which is moved outwards; it is, on the contrary, the internal one which is pressed inwards. This, for instance, is visible in the anterior inferior part of the frontal bone, in the middle of the *spina cruciata* of the occipital; and, as we have observed it, this separation is the more considerable as the individual is more advanced in years, where the muscles have acted for a very long time. In nature, therefore, we always observe the contrary of that, which, according to the objection, should be the result of the action of the muscles.

7. Some physiologists pretend, that the action of the muscles causes the depression of their points of attachment. Others attribute to them the prominences and the apophyses, for example, in the different bony processes, &c. In fact the muscles are attached sometimes in hollows or grooves, sometimes to prominences and crests; and it is precisely this, that proves that neither prominences nor depressions are formed by muscles; but that both are in consequence of the primitive form of the bones. In fact, who could attri-

bute the osseous crest, situated on the most projecting part of the cranium of certain animals, the occipital crest of the horse, the ox, the stag, &c., to muscles which act in quite a contrary direction? Will any one attribute to the action of muscles, the mastoid process situated behind the ear? But then, how can any one explain the other processes, whose direction is diametrically opposed to that, in which the muscles act; for example, the prominences of the occipital bone, which project from before backwards; the strongly developed osseous drum, which most of the mammalia have near the cavity of the tympanum? And why is it that the mastoid processes are often so strongly marked in very feeble men, and very little developed in those of an athletic constitution?

8. In tortoises, the strong masticatory muscles are placed in the internal cavities of the head; so also in all animals certain muscles are placed in the interior of the orbits: but have these cavities ever been seen contracted, enlarged, or modified in any manner by these muscles?

9. In certain diseases the action of the muscles curves the spine of the back: in most of these cases the right shoulder rises above the left in consequence of this action; here, say they, is a modification of bones produced by the muscles. The instance cited shows that when the action of certain muscles becomes predominant, their more feeble antagonists yield, but by no means proves that the form of the bones is modified by such an action, and that it can produce depressions, plane surfaces, and the prominences of the cranium.

M. Blumenbach cites the cranium of an old man, the left side of whose face had been so much contracted in consequence of *tic dolooureux*, with which he was for many years afflicted, that it contrasted singularly with the right side. The violent cramp, says M. Blumenbach, has depressed the zygomatic arch of the affected side, as much as it has elevated the neigh-

bouring part of the lower jaw, and it has separated outwardly the zygomatic apophyses.

But, 1. This example is taken from a pathological case. There had existed here, during many years, a diseased condition of the parts. 2. M. Blumenbach makes no mention of the changes which the cranium had undergone. 3. It is more than probable that, in this long continued disease, the nerves of the face being in a state of atrophy have induced also an atrophy of the parts in which they are situated, which has produced a general wasting of these last, by which they are drawn together; but, finally, how were the muscles enabled to separate outwardly the zygomatic apophyses? What I have just said will be sufficient, I believe, to enable anatomists and physiologists to adopt more sound ideas on the actions of the muscles, and on the prominences of the cranium, and induce them to renounce the objection, which they derive from muscular action, against the utility of inspecting the forms of the head, in order to judge of the greater or less development of particular cerebral parts.

Hufeland believes that the prominences, which may arise in the cranium from accidental causes, such as blows; from gouty and syphilitic matters, &c., furnish a further objection against craniology, and that the cranioscopist can easily mistake an accidental exostosis, for the indication of an organ strongly developed.

In a similar case the cranioscopist would be liable to mistake; but that would by no means prove that in a state of health the organs, which have assumed a marked development, could not be exhibited on the cranium by determinate prominences. For the rest, the accidental exostoses, of which Hufeland speaks, disappear at the end of a certain time; they do not correspond on the two sides, and have not the form of the convolutions of the brain.

If, after all, Hufeland wishes only to prove, that one can be mistaken in craniology, and if besides he admits craniology, I am far from contradicting him.

Errors are very possible, especially in those cases where persons, who have not the requisite knowledge and experience, undertake to examine heads. But where is the art or science in which error is impossible? Do not even mathematicians commit mistakes?

Platner of Leipsic rejects all the organs that I have discovered on the median line; for, says he, the longitudinal sinus exists in the whole length of this region, and it does not correspond to any cerebral part. (Pl. ix. fig. 48, 69.)

It is true, that immediately under the cranium, the falciform duplicature of the dura-mater separates into its two laminae, and is attached to the superior borders of the parietal bones, and that it forms there a groove or sinus, but this sinus has hardly the diameter of a large sized quill. This space is much too narrow to prevent the median line of the cranium from forming projections externally, in those places where very strongly developed convolutions exist; and, consequently, to conceal the considerable development of these parts. In the occipital region, and often in the frontal region, the hemispheres separate more or less from each other. (Pl. iv. fig. 25, 28.) In this case the middle part of the *spina cruciata*, and of the inferior part of the frontal bone, descend deeper into this separation of the two hemispheres; the prominence of the cranium too, formed in the occipital part by the two posterior lobes, is double in this case, whilst it is single when the hemispheres are only slightly separated. (Pl. viii. fig. 48; Pl. ix. fig. 48, 69; Pl. xiii. fig. 48, 69.)

Finally, it may be asked, if it is possible to discover the functions of all the organs. I shall examine this question in detail, when I come to speak of the means of determining the seat of the organs. Perhaps the surface of the cranium is not sufficient to enable us to decide on this point; for, there are convolutions which do not touch its internal surface. The most concealed of all, and which have escaped thus far the

eye of the anatomist, are those which cover the *corpora striata* on their external surface. (Pl. v. fig. 42; Pl. XIII. fig. 68.

All the convolutions situated on the two internal faces of the hemispheres, which receive between them the falciform duplicature, and by means of which they touch each other, present fewer difficulties. (See Plate XI., which represents a vertical section of the brain, between the two hemispheres.)

In attentively examining these convolutions, we remark, that they are all prolonged, more or less vertically, to the surface, and that thus they are found in contact with the internal surface of the cranium, through the medium of the membranes.

We have constantly observed, that these internal convolutions have the same size with those placed on the surface; the former are then but a continuation of the latter, and probably constitute a part of the same organs. Generally, in all the convolutions, we can only judge of those portions of them which appear at the surface; the rest are concealed in the anfractuosities. Neither does the cerebellum touch the cranium in the whole of its extent; yet notwithstanding this we judge of the degree of its developments, and this without ever deceiving ourselves, by the greater or lesser protuberance which the occipital fossæ externally present.

The part of the brain situated at its base, quite near the median line (Pl. III. fig. 26, 70; Pl. IV. fig. 70), is the only part that absolutely escapes the observer, in his examination of the cranium. The degree of development of all the other convolutions, is manifested either in the temporal region, or by the form of the orbits, or by the position of the eyes.

I will further add some observations by M. Démangeon,* on the influence of the brain in the form of the cranium.

* Analytical and Critical Picture of the Work of Dr. Gall. Paris. 1822.

“Those who have not reflected on the economical operations of nature, wherein the parts, the least essential for her purpose, are always kept in subordination to the influence of the most important ones, represent her as acting according to ideas which the grossest mechanism has suggested to them, where the employment of the most gross external agents cause the less resisting to yield. Forgetting that a drop of water in time hollows out a very hard stone, less by its consistence, than by the continuity of repeated dropping, they cannot conceive, that the continual action of nature in nutrition, changes and modifies the hardest as easily as the softest parts, by the successive apposition of nutritive elements, and the re-absorption of those that have remained a long while in the system. For this reason they would have us believe, that the brain obeys the inert resistance of the cranium, because this last is the hardest, in spite of the evidence to the contrary, in hydrocephalic subjects. It is then by an inconsistency which puts them in contradiction with themselves, that they recognise the dilatation of the cranium by the action of water in hydrocephalic subjects, and the sinuosities of the sanguineous vessels on the osseous surfaces.

“It is also with the same inconsistency, that they admit the action of the muscles as the cause of the production of the prominences of the cranium, although they are softer than the cranium; besides, that, observation proves that the protuberances are either out of the sphere of muscular activity, or in no sort of proportion to it. However, they not only see the brain and the soft parts, but also the cranium and all the bones gradually increase with age, notwithstanding the previously acquired dimensions and consistence of these last. They see also the shell of the snail, the shield of the tortoise, &c., progressively increase with the animal which they enclose, and assume protuberances without the assistance of any muscular traction exercised upon their texture externally. This takes place

for no other reason, than, because the shell and the testaceous covering are rather made for the animal, than he for them ; and it is also reasonable to believe that the brain, being an object more essential to the end of nature than its osseous envelope, this last ought to yield to the developments of the former, as every thing demonstrates that it does. Nature then is less embarrassed by the consistence of the hard parts, in her attempts to develop those that are softer, than some would have us believe. It is by dreams of fancy, that the domain of the sciences is incumbered, and we must scatter them in order to penetrate therein and extend its bounds. It is a general axiom in natural philosophy and physiology, that it is not from the greater or less consistence of parts, but from their greater or less energetic or continued action, that those changes that are effected in nature depend. But, as of all animal parts the bones and scales are the most inert, they have the least power also, to modify and influence the other parts in their forms and developments."

Of the Influence of the Brain on the Form and Texture of the Cranium in a State of Disease.

The Influence of the Brain on the Cranium in Cases of originally defective Conformation of the Brain.

Other bones, it is said, grow independently of the brain, and receive their determinate form according to the laws of organization ; why does not the cranium too, grow and receive its different forms independently of the brain ? This supposition is founded not only in analogy, but it is further confirmed by the existence of crania absolutely devoid of brains.

Crania without brains ! I have proved already, that such do not exist. Let us refer to what I have established in my large work.

I have cited Duverney and Tauffer, who found in two heads of new-born infants water only, and no cerebral substance. I have thought that these heads belonged to the class of those observed by Morgagni, Bonnet, Vesalius, Tulpius, &c., where the brain, dilated or unfolded into a fine membrane, might have deceived Duverney and Tauffer.

But since my large work was published, I have myself had occasion to examine the hydrocephalic head of an infant born dead. Being more voluminous than the generality of heads of new-born infants are, it was delivered with difficulty, by the forceps, but without perforation, by M. Delpech. The superior, posterior, and lateral fontanelles were very large, and the fluctuation of a considerable mass of liquid was distinctly perceived. M. Hervez opened it with the greatest precaution in presence of MM. Delpech, Bousquet, and myself. After the incision of the cartilaginous membrane and the dura-mater, there escaped as great a quantity of water as the cavity of the cranium could contain. It was impossible for us to discover, on the whole internal surface of the cranium, the least trace of an arachnoid membrane, of the pia-mater, of a vascular membrane, or of cerebral substance, or, even the least mucosity on the internal surface of the dura-mater.

All the bones of the head, which I have preserved in my collection, were perfectly developed, and presented their natural forms; only the orbital plates were depressed, as usually occurs in hydrocephalic cases of any extent. This fact refutes then my first assertion, and it proves that the bones of the cranium may take their natural forms, independently of the action of the brain against their internal surface.

I will relate two analogous facts reported by M. Breschet, Chief of the Anatomical Department of the Faculty of Medicine, &c.

First Observation.

“A few days since, there was left at the Foundling Hospital, a male infant, which appeared to be ten or twelve days old; for, the umbilical cord had fallen off, and the umbilicus was completely cicatrized.

“This child lived nearly two days in the hospital, and during its continuance there, it manifested great weakness, had a laborious respiration, and some convulsive motions. The form and volume of the head exhibited nothing extraordinary, which could enable any one to suspect the existing disposition of the organs enclosed within the cranium; only the bones of the cranium were movable in the sutures.

“When the cavity of the cranium and the membranes of the brain were opened, there flowed out a considerable quantity of a clear, limpid serosity, resembling distilled water, in quantity from twelve to fifteen ounces. This watery fluid was contained within the cavity of the arachnoid membrane. The dura-mater appeared in its natural state, but the arachnoid membrane and the pia-mater were thickened and firmer than usual, and of a very vascular appearance. The brain and the cerebral peduncles (anterior prolongations) did not exist. In front of the annular protuberance, or middle brain, nothing was seen but a small quantity of a soft, greyish substance, with inequalities on its anterior part; this substance, at most, occupied an extent of from eight to ten lines from side to side, and from before, backwards.

“The cerebellum was covered by the duplicature of the dura-mater, which forms the tentorium. Its right lobe was but half the size of the left. The annular protuberance, the bulb, and the spinal cord were in their natural condition.

“The nerves being carefully laid bare, we distinctly

saw* the first pair, or olfactory nerves, the anterior protuberance of which was strongly marked; we saw also, two white filaments, which were directed backwards towards the spinal marrow; still, we were not able to follow these cords either to their origin or their insertion.

“The optic nerves, being exposed from the globe of the eye to the cavity of the cranium, exhibited in the orbit their ordinary size, but beyond the optic holes, their calibre diminished. Their point of union seemed less formed by the mingling of their common substance or their decussation, than by a transverse commissure of two or three lines in extent. These two cords then continued on, diverging, and terminated in the anterior part of the protuberance, towards the two anterior eminences of the *nates* and *testes*.

“The third pair was followed in all its branches, as well as the fourth and sixth. As to the fifth, its origin could easily be seen. Forming at first a single cord, it passed upon the anterior face of the petrous portion of the temporal bone to divide as usual into three branches. We followed the first or ophthalmic of Willis into the orbit and on the frontal region.

“Finally, the auditory nerve, the pneumo-gastrics, the glosso-pharyngeal, and the great hypoglossus, presented nothing unusual. The same was the case with the spinal nerves.”

Another fact of the same kind has been furnished me by M. Beclard. I will give an abridged history of it.

Second Observation.

“A fœtus was born at the full term, at the hospital of the School of Medicine, having its head a little larger than usual. The accouchement was natural, but rather long. The child lived five days.

* I say, we saw, because this examination was made by my associate Baron and myself in presence of MM. Veron and Lelut, students in the Foundling Hospital.

“The head being opened, the cranium was found filled with a lemon-colored water, a little viscid. The spinal marrow, the cerebellum, the pons Varolii existed. The medulla oblongata was divided in front, and exhibited the peduncles of the brain terminated by eminences, which appeared to be the optic thalami and the corpora striata. Besides this, the medulla was prolonged between the peduncles in two small white cords, which terminated in the ethmoidal grooves by the expansions of the olfactory nerves.

“This curious observation differs from the preceding one in this, that, in the second case, the cerebral peduncles existed and appeared to terminate in front with the eminences, which M. Beclard thought were the corpora striata, and the pretended beds of the optic nerves. Nothing similar was seen in the first case.

“If, from a small number of facts, we could come to general considerations, I should say these observations tended to prove, that congenital hydrocephalus depends rather upon some defect in the development of some of the cerebral parts, than upon an alteration, or in the destruction of this organ by the liquid.

“That, from these observations, it is reasonable to presume that the evolution of the brain had not taken place, that is to say, that its development had been arrested.

“That existence, or life in atmospheric air, is possible for a few days, without a brain.

“That the brain does not give rise to any nerve, and that, as far as the nervous system is concerned, we may consider it as being rather a ganglion for communicating nervous influence, than as the source of any nervous cords.

“That the olfactory nerves, existing in infants in whom the brain is wanting, do not derive their origin from this portion of the cerebral mass, unless we admit, that all the parts arise independently of each other, in the situations, where they are found.

“The size of the olfactory nerves in new-born children, which is always considerable, their club-like figure, the nature of their substance, the filaments coming off from the inferior surface of their bulb; finally, their existence in the children which I have described, lead us to believe, that those parts which are called the olfactory nerves, are not so much nerves, properly so called, as little lobes or prolongations of the spinal cord, analagous to the brain itself.

“If we consider them as nerves, we must admit, that the cerebral lobes or the corpora striata, are not the places of their origin, but that they derive it from a point farther distant.

“Do we not find in many fishes a disposition of parts which supports what I have advanced; and is there not a striking analogy between the conformation of the ethmoidal nerves of these animals, and those of the foetus without a brain?

“In relation to the development of these prolongations, we may say, that the analogy of conformation is as much more strongly marked between man and these animals, as we examine the former at periods nearer his earliest formation, that is to say, during his foetal life.

“Finally, from the observation of M. Beclard and myself, we are authorized in believing that the normal development of the containing parts, is not in dependence on the existence and the regular growth of the contained parts. The cranium may present a regular form, although the brain is wanting, or, if it has experienced a greater or less deviation in its evolution.”

I perfectly agree with M. Breschet, when he presumes, that in these cases, the brain has been arrested in its development, and not destroyed or dissolved by a liquid. We have already proved this truth, in our Memoir presented to the Institute of France, the 14th of March, 1808, followed by observations on the report which was made on it, by the commission to which it was referred.

We have also proved, in many places, that the brain, properly speaking, does not give origin to a single nerve. But it would be wrong to consider the brain as being rather a centre for the nerves, than as the source of any nervous cords. The brain contains many masses of a grayish or gelatinous substance; for example, in the medulla oblongata, in the annular protuberance, in the optic thalami, so called, in the corpora striata, and in the whole surface of the convolutions which furnish new nervous filaments to those, which were already furnished by this same substance anteriorly, and these are the ganglia of supply (*renforcement*) of the white fibrous substance of the brain and the cerebellum.

As to the olfactory nerve, we have exhibited in our first volume, (Quarto, page 117; Folio, page 84,) the opinions that are held on it, and we have proved that it has no connexion with the corpora striata, which serve solely as ganglia of supply (*renfort*) to the brain.

Let us return to those cases which most frequently occur. When there is no brain, sometimes all the parts situated above the neck, the chest, the umbilicus, &c., are wanting also.

When the nerves of the senses only exist, some only of the cerebral parts, placed at the base of the cranium, are developed, that is to say, those from which these nerves are derived. In these cases the base of the cranium is but imperfectly developed, and gradually and in the same proportion as more cerebral parts exist, there is also a further development of some of the inferior and lateral parts of the cranium. These are called acephalous monsters, because neither brain nor cranium is distinguished above the eyes. PLATE XVIII. represents such a case, (fig. 3.) We see there the optic, the olfactory, and the auditory nerves. The anterior inferior part of the frontal bone, which goes to form the orbits, the temporal bones, a small portion of the parietal bones, and of the occipital, &c., are but just commenced; in the

unfinished parts a great opening is left, *B*. I have proved, vol. 1. p. 52, 4to., that similar monstrosities are not born so in consequence of cerebral dropsy, but that the fœtal defect is absolutely original. **PLATE XIX.** fig. 11, represents a vicious conformation of the brain. In this head, all the posterior inferior part of the occipital bone is wanting; in consequence of this, a great opening remains in the posterior part. For some time a commencing portion of brain existed there. From this cause the middle portion of the parietal bone is a little swollen; but afterwards the brain escaped by the posterior opening, and the bones of the cranium, not continuing to arch, have remained flattened on the remnant of the brain. The subject in question is of the number of monsters which have, on the back of the neck, a membranous sac containing a very imperfectly developed brain. Similar vicious conformations evidently prove, how much the form of the cranium depends upon the form of the brain, and that the bones of the cranium are very rarely formed by laws independent of the brain.*

In these cases, where the brain has acquired but a very imperfect development, the cranium remains small in the same proportion. **PLATE XVIII.** fig. 11, represents the contour of the brain of an idiot from birth. This is from Willis. In fig. 1, the cranium of a child seven years of age, an idiot from birth. **PLATE XIX,** fig. 1, the head of a man twenty-six years of age, an idiot from birth. Mr. Bonn, Professor at Amsterdam, possesses the cranium and brain. **PLATE XX.** fig. 1, the head of a girl, twenty-two years of age, imbecile from birth; fig. 11, the cranium of the same. I have before spoken of these heads, and of many other similar ones which I have in my collection.

* M. Geoffroy St. Hilaire has given drawings of these three acephalous monsters in his excellent memoir on many of the malformations of the human cranium, read before the Academy of Sciences, 1820.

When the cerebral parts increase in volume, the original imbecility is less complete in the same proportion, and the cranium, although still imperfect, acquires also more development. PLATE XXVI. exhibits the cranium of a boy of fifteen, who, on account of the great development of the organ of property (acquisitiveness) and a defective conformation of the frontal parts, XXI. 53, 54, 55, 56, had an irresistible propensity to rob. PLATE XXIX. represents the cranium of an old woman partially imbecile from birth. Let any one now compare these defective crania of persons, who only enjoyed qualities and faculties as defective as their brain indicates, with the beautiful cranium which encloses the well developed brain of the man of talents. (Pl. xxx. and with Pl. xxxix. and Pl. lvi.)

The Influence of the Brain on the Form of the Cranium in Hydrocephalus.

When, in consequence of a collection of water, which takes place in the cavities of the hemispheres, the cerebral convolutions are unfolded and distended, the cranium contracts a faulty conformation, which is precisely the inverse of that of too small crania. In this case the unfolded brain distends the bones of the cranium, whether they are yet united by their sutures or not. In the early periods of this distention, we perceive exposed between the edges of all the cranial bones, or sometimes between some of them only, the cartilaginous membrane, which is visible over a large space at the place of the fontanelles.

In infants, that are born hydrocephalic, the head is compressible, that is to say, by the aid of compression, we can cause the bones of the cranium to approach each other. This circumstance is very important in legal medicine; since, in a similar case, we

should not, if the child dies during delivery, attribute its death to the mother. From the age of a few months up to ten or twelve years, effusions of water frequently take place in the cavities of the brain, in consequence of neglected cerebral inflammations, of a too rapid development of the brain, of falls or blows upon the head, and also in consequence of frequent masturbation. When such patients have, by degrees, lost their sight, and the pupil remains motionless and insensible to light, being constantly dilated; when they vomit frequently, &c., I have sometimes found the bones of the cranium already more or less separated, even sometimes to the distance of from three to six lines. Cases are recorded, where persons, even of more than thirty years of age have had effusions in the cerebral cavities, and where the bones of the cranium have been considerably separated in a very little time.

If the effusions are of such a nature as not to lead to the death of the individual, a great number of osseous points is formed in the cartilaginous membrane whence the little bones arise, which reunite anew the bones of the cranium *or selets vormiens*. (Pl. XXI.)

In most cases, when the fluid collects slowly in the cerebral cavities, the osseous radii become solid, and have a tendency to elongate as the distension increases, and to keep the cranium closed on all sides, without any particular points of ossification being formed. The cranium of a child seven years of age, completely imbecile, and almost entirely stupid, represented in Plate XXIII. is of this kind. We only perceive the cartilaginous membrane in a few places; the superior orbital plates are so entirely depressed from above, downwards and forwards, that the eyes of this child are very low and projecting. PLATE XXIV. represents the same case seen in front.

The following passage, extracted from Blumenbach, proves still better, with what force the internal parts

of the head act on the bones of the cranium. "In internal hydrocephalus," says this author, "the parts of which the temporal bone is originally composed, preserve, in fact, their primitive dimensions, but they are sometimes separated by the distension of the cerebral membranes, so that the small bones of the ear lose their natural situation and are put out of joint. I have seen very frequently in hydrocephalic patients, where the temporal bone had undergone this deformity, the *malleus*, the *incus*, and the *squamous* portion carried from below upwards with the temporal bones, and the *incus* absolutely separated from the *stapes*; once, I have even seen the *stapes* torn from the *fenestra ovalis*. This will explain why some hydrocephalic adults are deaf and stupid at the same time, while others preserve their hearing perfectly."

PLATE XLIX. represents the superior part of a hydrocephalic head of an infant of four months. As in this case the effusion had progressed rapidly, the whole head represents a parchment pouch. Here and there are seen some ossified parts; in general, there are observed, alternately, points and radii of ossification, and the cartilaginous membrane. The whole cranium had the flexibility of parchment. Generally the crania of hydrocephalic patients, even at the age of fifty and sixty years, are very thin, although completely ossified.

Ackermann and M. Fodéré, in their observations on the heads of cretins, remark certain peculiarities as always existing, but which, probably, they have only observed in a small number of subjects. I have observed a great number of cretins; I will not stop here to describe their whole constitution, I will speak only of their heads. The head is either incompletely developed or hydrocephalic. PLATE XXI. represents in profile a similar case of hydrocephalus of the common species. PLATE XXII. represents the same, seen from above. The water has acted there in all directions, but principally in that of the occiput.

The orbital plate is also strongly depressed; there does not exist on its internal surface any digital impression; which proves that the convolutions which rested upon it, originally projecting but little, were already entirely unfolded.

I would remark by the way, that, in the greater number of these hydrocephalic patients, we find the hairy scalp covered with a furfuraceous efflorescence.

There exists a great variety of these malformations of the head, which probably are most frequently owing to effusions.

PLATE XXXI. represents a similar head in front; the frontal suture is not united; the regions ix. ix. d. c. are far from being symmetrical; the orbits are superficial. PLATE XXXII. shows the same cranium in profile; we see that the diameter of xxi. in 11, is much smaller than the distance from one temporal bone to the other. The extraordinary long head, Pl. LIV., exhibits quite an opposite character. I know nothing of the particulars of the lives of those individuals, from which these two crania were taken.

As some preserve their mental faculties in spite of a very considerable hydrocephalus, so also we find, sometimes, the most singular forms of head among those individuals, who enjoy their faculties in all their strength. But we must not forget here, what I have said, in volume second, of the dispositions peculiar to mental diseases. Those heads which, in consequence of an extraordinary but not diseased development of certain organs, have assumed an uncommon form, are absolutely an exception to that, which is applicable to the predispositions to mental diseases.

Influence of the Brain upon the Cranium in Mental Diseases.

Mental alienations are diseases of the brain. Happily, in our days, Democritus would only find his Abderites among certain metaphysicians. If any one wishes to combat opinions fraught with the most dangerous consequences, let him oppose those which condemn to a cruel neglect and imprisonment in infected cells, those unfortunate victims, who always merit our compassion, and often our esteem. We hardly dare to fix our attention on the establishments for the insane; so defective are they in most countries, that they appear the shameful monuments of the most profound ignorance.

I soon perceived, that my researches would throw great light on more than one point connected with mental diseases. How could physicians, who had not the least idea of the functions of the brain in health, have just ideas of mental diseases? I employed myself, therefore, to open as many crania of insane persons as I could procure. I have already proved, in Vol. II. p. 206, that we find in the brain and its membranes, and even in the cranium, various sensible alterations. I shall now communicate to my readers, what I have ascertained relative to the cranium alone, and what Spurzheim and myself have constantly found confirmed.

When the alienation has been of short duration, the cranium often does not offer the least trace of diseased alteration, unless the disease has been developed insensibly, and in such a manner as not to show itself, until after a long period. Very frequently, we mistake the first phenomena of madness; we attribute to caprice, to carelessness, to vice, to a change in the moral character, what, in fact, is only the early manifestation of cerebral disease. But, when the disease of the brain is chronic, the same phenomena are manifested in the brain, that we observe in nerves that

have been diseased for a long time. After a long continued disease of the sciatic nerve, it gradually wastes away, and all the parts, to which it gave sensation, partake of this wasting. The same thing happens to the brain, when its vital forces have been injured for a long period. It wastes ; its convolutions become narrower and lose their turgescence ; the whole brain shrinks ; and here, as in advanced age, the internal table of the cranium follows the sinking in of the brain. The bones of the cranium thicken, but they do not become, as in old age, more spongy and lighter, but, on the contrary, more dense, compact, and heavier, approaching the nature of ivory. (Pl. xxxvi.)

Many physicians have remarked this circumstance, but, far from regarding it as the consequence of a cerebral disease, they consider it as its cause. They have considered that the cranium, in consequence of its thickness, compressed the brain, and disturbed the exercise of the mental functions. Even in our days, Dumas, Bailey, Sir Everard Home, and others are of this opinion. If such were the case, mental diseases would only arise very slowly, and we should hardly be able to conceive how, by the aid of rational treatment, so many maniacs have been cured, and often in so short a time.

I am not the first, that has observed this thickening and this ebony hardness of the cranium ; still physiologists and physicians have generally paid so little attention to it, that when I spoke of it, all contradicted me. In vain did I cite to the support of my observations those of Greding, whose writings were unknown to me for a long time after I had commenced publicly teaching my discoveries. This physician, in two hundred and sixteen bodies of maniacs that he opened, found a hundred and sixty-seven crania very thick, without speaking of those which in reality were not thick, but very dense. In a hundred violent maniacs he found seventy-eight crania very thick ; in thirty crania of idiots, he found twenty-two very thick.

These exact observations were not sufficient to awaken the incredulous from their lethargy. Walter of Berlin remarks on this subject, "My whole life has been consecrated to the study of animal bodies, and human bodies in particular. I have examined the brains of the insane of every species, but never have found their crania thicker than in ordinary cases, as Doctor Gall maintains." Rudolphi, entirely occupied in maintaining his own opinion, passes over in silence the great number of thickened crania of maniacs that Greding has found, and insists on the small number of thin ones, of which Greding also speaks. As to my observations, he says, that my opinion is founded on a single cranium that I possess. However, when I had the honor to receive a visit from Rudolphi at Vienna, I exhibited to him a sufficiently large number of thick crania of maniacs that I possessed. In France Greding is reproached as having understood nothing of the anatomy of the brain, and the general opinion is based on that of M. Pinel, who only mentions one single cranium, which was very thick.

M. Esquirol also pretends to have made observations, which prove the contrary of that which I have advanced. Notwithstanding this, we found, in the far greater part of the heads that were sent us from the Bicêtre and the Salpêtrière, crania so thick or dense, that M. Spurzheim was able to tell whether the head, which he was engaged in opening, came from one of these two hospitals, or some other hospital, from the force which it opposed to the saw or hammer. Finally, M. Esquirol himself cites a great number of crania of insane people, which had become very dense and thick, or, what was more general, only very dense.

Probably this observation would have been less contradicted in France, if it had been recollected, as I afterwards learnt, that Bichat had made the same observations on the heads of maniacs. M. Curt Sprengel says also, that, in opening the bodies of the melancholic, he often found the cranium of more than usual

thickness. It is impossible that physicians, who are engaged in the opening of dead bodies, can, for a much longer time, contest this truth, unless, by a procedure unworthy of scientific men, they should desire to sacrifice a manifest fact to personal considerations.

When the insane become very aged, they feel the influence of years, and their cranium becomes thinner, as that of other old persons.

I do not wish to exclude the cases, where, by a general disease of the osseous system, by rickets, by an herpetic diathesis, by *horriago*, (scald-head,) &c., all the bones may be found in an unnatural state, for example, become thicker, a change in which, perhaps, the brain has no part. We have seen, in the collection of the Elector Maximilian, a cranium, the bones of which were certainly an inch in thickness; but the bones of the jaws were proportionally thick, which does not occur in the bones of maniacs. It remains for us to examine, if a similar disease of the bones exists independently of a total derangement of the nervous system.

The changes of the bones of the cranium, which are simply the consequence of a cerebral disease, afford us the certainty, that the brain is the immediate seat of the disease; and that it is not necessary to search for the causes of these diseases either in the mind, or in a pretended perversion of the imagination, but in the material instruments.

These same changes teach us also, why these cerebral diseases resist curative measures so much the more, as they become more inveterate. The cure ought to be much easier so long as organic derangement does not exist; it would be more difficult, and often impossible, when shrinking and atrophy of the two cerebral substances, thickening of the membranes, ossification of the vessels, and thickening of the cranium have already taken place. Finally, these successive changes enable us to conceive, how mental diseases degenerate eventually into incurable mad-

ness. The cases where insanity, consequent upon a long disease, has yielded to treatment, are extremely rare; and this amelioration of the mental condition leads almost always to a violent paroxysm, during which an irritation, as sudden as it is excessive, produces a lucid interval rather than a cure.

A similar state is observed in idiots after wounds of the head. The moments of exaltation, which the dying sometimes have, may be attributed to the same cause.

The Influence of the Brain on the Cranium, in those Cases, where certain Cerebral Parts are more diseased than others.

It often happens, that the head is more prominent on one side of the forehead or the occiput, than on the other. When this want of symmetry does not arise from the situation, in which the heads of such persons had been placed from early infancy, they are generally, in the early years of their life, in very feeble health, or subject to nervous convulsions. In such cases we may always suppose, that a watery effusion exists in the prominent side. In adult age the health is often reëstablished, but the partial distention of the cranium continues; and the patients, in process of time, perceive the motion of water. They say that they have the sensation of a cold ball, which moves in their head, sometimes forward, sometimes backward. They are subject to head-aches, especially at the approach of a tempest or a storm. I have already spoken of two crania, one of which had become very dense and thick at the anterior part of the frontal bone, because the part of the brain, situated against this region of bone, had suffered from a neglected inflammation, the consequences of which had caused the death of the individual. The second of these crania had become very dense and thick in the region of the occiput,

in consequence of a large excrescence in the *tentorium* of the *cerebellum*, which had compressed the posterior lobes of the hemispheres. In the cranium of the æro-naut Blanchard, the right side was thicker than the left; the orbital plate of this side was more prominent, the internal cavity was smaller, all the anterior part was more protuberant; and this, because there had been a greater collection of water in this side than the other. In a decrepid old woman we found the *cerebellum* hardly as large as in a new-born infant. The brain itself had not diminished in the same proportion, consequently the cranium was very thick at the inferior occipital region only. The occipital fossæ were extremely small, and hardly transparent in a space of from two to three lines. The petrous bones, in their posterior part, were half as thick again as in their natural condition.

In the cranium of a man, who had received a sabre wound in one of the occipital fossæ, in consequence of which the *cerebellum* had been in a state of sup-puration for several weeks, the occipital fossa of the same side is much smaller, and the bone is much thicker than in the other side. In the head of a young woman that was sent to us from the Salpêtrière, and of which I have before spoken, we found the left hemisphere much smaller than the right; this arose from a large ulcer in the middle of the optic couch, so called, of the left side. This optic couch, or rather this cerebral ganglion, had diminished more than half; the corpus striatum of the same side, and all the left hemisphere, had undergone the same diminution. PLATE LI. fig. 1, represents the sound hemisphere entire; fig. 2, the sound optic couch; fig. 3, the sound corpus striatum; fig. 4, the two anterior lobes seen from below with the two optic nerves. PLATE LII. represents the two hemispheres, but the left hemisphere alone is entirely visible; the right hemisphere extends beyond it, and we observe how much smaller the convolutions are. Fig. 2, is the optic couch

shrunk by suppuration and atrophy; fig. 3, the corpus striatum also in a state of atrophy. As to the cranium, Plate LIII. the whole of the left side is thicker than the right, particularly from the temporal to the sphenoidal bone; the left orbital plate is spherical and uniform, whilst we observe distinctly in the right orbital plate, which is much less convex, the impressions of the convolutions. The fossa between the orbits and the petrous bones, is much smaller than that of the opposite side; thick depots of osseous matter are seen on the internal inferior part, and on the internal lateral part, of the temporal bone, the petrous portion thicker, the occipital fossa smaller; in the cranium also, is seen the same shrinking as in the left hemisphere of the brain.* Later, I received a head, in which the right hemisphere was still more diminished, than in the preceding case. I have preserved a cast of it. In the cranium we observe on the right side, the same thickening and the same proportional contractions, that we observe in the preceding case on the left side. In both of these crania the temporal bones, so transparent in the natural state, are three lines thick on the diseased side. In both, all the other bones are considerably thicker on the diseased side, than on the healthy side.

M. Esquirol possesses a similar cranium, and Greding mentions many, that were thicker on one side than on the other. Will any one, after this, deny the influence of the brain on the form of the cranium!

* If the ophthalmic couch, so called, belonged to the optic nerve, one of the sides of this nerve should have been considerably shrunk. But such was not the case; the simultaneous wasting of the optic couch, the corpora striata, and the hemisphere, proves that the optic couches and the corpora striata are only apparatus of supply (*renfort*) for the hemispheres, as we have demonstrated in our anatomy of the brain, by numerous proofs of another kind.

The Influence of the Brain on the Cranium in Subjects predisposed to Suicide.

There is no mental disease which surprises its prey more secretly, than the unfortunate disposition to suicide. I regret that I am not able to treat the matter thoroughly in this place. I shall confine myself for the present to the consideration of the cranium.

We have examined many brains and crania of suicides; in all we found the cranium very dense, heavy, and also very thick; or, if it was not thickened, it resembled ebony, as it does in every other species of mania of long duration. The heaviest, thickest, and densest of all the crania in my collection, is that of a man, whom, not only an unfortunate propensity influenced to destroy himself, but who, before committing the act, believed that he was bound in duty to immolate a wife whom he loved. At the end of the first volume, I have devoted a few pages to this terrible disease, and I have related many examples of it.

Three crania of suicides, for which I am indebted to the kindness of Baron Larrey, are equally thick and dense. Since this phenomenon is so often manifested in suicides, it is certain, that, in the greatest number of cases, this propensity for self-destruction is a true and real disease of the brain, although its remote cause often resides in the abdomen.

We have often found in great criminals, whose crimes were greater than the external circumstances of their condition would seem to indicate, the cranium in the same condition as that of maniacs. Let observers and judges bestow some attention on this subject!

The Influence of the Brain on the Cranium, in Lesions of the latter, and in certain Diseases of the Membranes.

Many cases are recorded, where, not only in infancy, but in adult age, portions of the cranium, forced inwards by external violence, have resumed their original situation, either immediately, or after some time. I have in my possession a cranium, in which a fragment of the size of an inch, of the superior part of the frontal bone, had been forced in. The external table has exfoliated; the inner one is still in the same plane with the rest of the internal surface of the cranium, although in many points of its circumference, the traces of the fracture can be distinguished. In consequence of the laws above established, all the anterior part of the cranium is thicker than the posterior part.

In another cranium, also, the whole internal surface is smoothed off, while we distinguish deep cavities on the external part, which are consequences of severe blows, which this individual, who was a soldier, had received at the taking of Otschakoff. (Pl. LV. fig. 2.)

In a third cranium, we distinguished many clefts and considerable fractures. The individual survived the accident a long time; for, with the exception of a few rents and hollows, the whole is very well re-established. One point is observed to penetrate some lines within the osseous cavity; but so much bony matter is deposited in this place, that the point in reality hardly projects; the cranium is thick and heavy.

Blumenbach also relates examples of the bones of the cranium being forced in, which have spontaneously, and all at once, resumed their proper situation some days after the accident. He cites also a dissertation of Obertauffer on this subject. A similar instance is reported in the *Archives* of M. Horn.

When excrescences are formed in the membranes, they rarely encroach on the soft substance of the brain; but, on the contrary, they press outwards. The internal table of the cranium is absorbed; the external is elevated externally, and becomes thin and transparent. It is by prominences of this kind, that we recognise the existence of excrescences, or hydatids, as well in animals as in our own species. I have preserved in my collection many crania of this kind.

In an intemperate man, the frontal bone was elevated in the region situated above the left orbit; for many years this protuberance gradually increased, without any other inconvenience than a swelling and palsy of the upper eye-lid. Finally, the memory and the other intellectual faculties of the man became enfeebled. The frontal bone continued to elevate itself more and more, severe head-aches came on, blindness, paralysis of the inferior extremities and incontinence of the natural excretions supervened; an apoplexy terminated his sufferings. There was discovered, under the prominence of the frontal bone, a considerable excrescence of the dura-mater; even the orbit was so much contracted, that the eye had been forcibly pushed forwards.

Petit saw a similar excrescence at the inferior surface of the anterior lobes; it pressed upon the orbits and displaced the eye.

When similar excrescences go on increasing, they end by perforating the cranium, and sometimes by acquiring, on the superior or lateral part of the cranium, dimensions equal to the head. (Pl. LV. fig. 4.)

In the state of disease, we see, daily, examples of the energetic manner with which the soft parts are capable of acting upon the bones. Aneurisms finally perforate the most solid bones. Excrescences wear away the ribs. I know an individual, who, having had the breast bone depressed by the elbow of his nurse, was rendered asthmatic for many years; but, finally, the continual effort of the lungs has caused the ribs to

yield laterally, they are curved more outwardly, and the lungs having acquired sufficient space, respiration is properly carried on. When the globe of the eye has been destroyed, the orbit gets sensibly contracted in two or three weeks. When, on the contrary, the globe degenerates into an excrescence, the size of which exceeds its natural dimensions, the orbit becomes dilated so far as even to displace the bones of the nose.

What I have said in this section, shows, under what circumstances we may infer, from the external form of the cranium, a greater or less development of the cerebral parts, and also teaches us, that we are not justified in deciding upon the form of the brain, or the degree of development of the different cerebral parts, from the form of the external surface of the cranium, in cases of mental alienation, in chronic diseases, whether of the brain or the bones of the head, in old age, and still less in decrepitude.

I shall now endeavour to explain, how I have been enabled to discover the seat of the cerebral organs.

SECTION II.

DISCOURSE PRELIMINARY TO ORGANOLGY.

On the Difficulties and the Means of determining the fundamental Qualities and Faculties, and of discovering the Seat of their Organs in the Brain.

WITH the exception of the exclusive spiritualists, who deny all connexion between mind and matter, there exists a sufficiently general conviction of the truth of the principles, that I have heretofore exposed, and which constitute the basis of the physiology of the brain. These principles are the irresistible consequence of a multitude of facts, that we cannot fail to observe every day. It will be sufficient to direct the attention of the least judicious of my readers to these facts, to enable each of them, imperceptibly, to arrive at the same conclusions. This, however, is not the case with respect to the determination of the fundamental qualities and faculties, and the seat of their organs. Some are pleased to say and repeat, that this part of my discoveries is the weakest and the least demonstrated. Special organology is further accused of absurdity, extravagance, madness, charlatanism, and imposture.

Still the determination of the primitive or fundamental powers of the mind, and the locating the seat of their organs or material conditions, constitute precisely the doctrine of the functions of the different parts of the brain. So long as these separate and particular notions are not admitted, the physiology of the brain will remain in vague generalities. Without this detailed knowledge, how shall we arrive at the most important applications which can be made, either to the right understanding of numberless physiological, pathological, and psychological phenomena, or to so-

cial institutions, criminal legislation, education, national characteristics, the arts, or the study of philosophy? The mystery of the gradual perfectibility of living beings is only explained by the successive exposition of their mechanical aptitudes, instincts, dispositions, and particular talents; it leads us, step by step, from the worm to the insect, from the insect to the fish, from the fish to the amphibious animal; from this last to the bird, from the bird to the mammalia, and from this to man; so that this *chef-d'œuvre* of the terrestrial creation is displayed before us, as the most complicated machine appears to the eyes of the artist, as carried on by the simplest wheels and levers.

These reasons impose upon me the obligation of demonstrating to my readers in the most rigorous manner, each primitive quality and faculty, and the seat of its organ, and thus giving to this part of my doctrine, the highest interest, and the most incontestable evidence.

Let us first pass in review some difficulties, which are constantly opposed to the discovery of a true physiology of the brain, and which still prevent metaphysicians, philosophers, anatomists, and physiologists from adopting it.

How far from the true doctrine of the functions of the brain are those, who consider man as an isolated being, withdrawn from all the laws of nature, as the image of creation, the microcosm, a part of the soul of the world, a portion of the divinity, an emanation from eternal light; and who, consequently, reject every idea of the connexion of man with any object of the three kingdoms of nature, as absurd and incompatible with his essence?

How far from a correct physiology of the brain are those, who attribute all the phenomena of man to the soul, to a spiritual being, in its essence and its actions independent of all material conditions, which is the efficient cause of organization, and the first cause of all the operations of human life?

And what becomes of the opinions of those who maintain, that the principal part of man, which constitutes his superiority over all created beings, has neither seat nor local determinate points, since a simple being exists without being contained, and has no relation to space ; that it cannot have organs, since there cannot be any relation of cause and effect between matter and spirit ; that it cannot carry within itself any sign accessible to our senses ; that the manner in which it acts is concealed from the scalpel, touch, sight, and every means of research ; that we perceive nothing but contradiction between matter and the operations of intelligence ; that the unity of consciousness, (*moi*,) the simplicity of sensation, the nature of an idea, revolt at a dependence on matter, and against any material situation ; that the soul, relative to time and space, is hardly ever with the body ; and that the mind is absent, when, in deep meditation, we are not conscious of impressions on the external senses, such as the sensation of hunger, thirst, pain ? &c.

Happily, these magnetizing and absolute spiritualists address to us these last words : “ What is, then, the brain, and for what does it serve ? ” and they answer with haughty disdain : “ We know absolutely nothing of it ; neither do we wish to know. ” What profound philosophy in this confession, and what noble resignation !

How can the idea of the fundamental, moral, and intellectual powers, and the cerebral organs come to those, who refer all the phenomena of animal life to a single principle, to sensibility or sensation, of which all the other functions, from the most obscure instinct to the most elevated faculty, are but modifications ? or, to those, who, by a similar tendency to abstraction, reduce the whole moral and intellectual man to two, three, six, or seven faculties of the mind, independent of all organization, and absolutely free in their exercise ? or, to those who make of the intelligence and the will, personified beings, manifesting

themselves, also, without the concurrence of organization, sometimes as instinct, sometimes as propensity, sometimes as a certain faculty?

How could those persons dream of positive, moral, and intellectual qualities, who believe that man and animals are born with the mind perfectly blank, like a *tabula rasa*, and who cause an indefinite number of instincts, propensities, and purely accidental talents to emanate from the impressions, received by means of the five senses, from education, from chance? &c.

How can they have directed their thoughts towards the observation of the fundamental powers and their organs, who have wandered in speculation; who wish to know how mind and body is united; how mind and matter act and re-act upon each other; what the mode of action of the faculties of the mind; what life itself is, the essence of thought; how the mutual influence of divisible matter and the indivisible mind takes place; how all the faculties communicate between themselves, so that many are simultaneous in their action; how they each select such knowledge as is appropriate for each; how they receive sensorial impressions; in what manner the brain *digests* sensations, and forms ideas from them; if the acquisitions of the memory are composed of printed characters engraven on the brain as in a book, or of images really painted on the brain; by what artifice the brain perceives ideas, the relations of ideas, and a long chain of reasoning, so that in reading, the eyes transmit to the brain, straight or crooked figures, the mere forms of the letters, only; how it is that this direct sensation, is precisely the one that escapes us; how, finally in this same reading, of which our eye is the sole agent, does our ear appreciate the harmony of a phrase, and judge of the sounds that it does not hear; what proportion is there between the concussion of a nerve, the concussion of a portion of the brain, of a portion of matter, by an articulate sound, by a gesture, and the sentiment of an offence, and the idea of injured

honor ; and when the passions are expressed even by silence, where is then the shock, and what is the organ that is charged with this new perception ? &c.

All these whys and wherefores do not refute a single one of the proofs, which I have brought forward in the treatise on the organ of the mind. Observe the difference between the language of the metaphysicians and that of the naturalists. The natural philosopher lays it down as a fact, that heat will lengthen a bar of iron, and that cold will shorten it ; that some drops of water, absorbed by a piece of wood, cause immense masses of stone to split ; that the electric fluid in the twinkling of an eye, dashes to pieces mnouments, which have resisted the action of many thousand ages. Let those reasoners present themselves, who cry out against the absurdity of thinking, that fluids, so movable, can exercise a similar action on the firmest and most solid masses, and they will demonstrate to you by sophisms, as conclusive as those against the action of the brain, that all which you take for facts, is absolutely impossible.

How can these metaphysical physicians find or adopt a physiology of the brain, who still oppose to it the following reasoning : “ The observer of physiological functions, studies only effects, and seeks to refer them to natural causes, so far only as he considers these causes and effects as being of the same nature ; it is always a real and apparent movement, which is deemed as produced by another interior movement, that is supposed to be concealed in the depths of the organization ; thus, it is the movement of the heart which produces that of the circulation, it is the slow compression of the sides of the stomach, which contributes to the transformation of aliment to chyle, and so of all the secretory functions, where the organic effects produced are always homogeneous with their real or hypothetical cause, and which are taken in the same objective sense ; although without going out of this uniform order of phenomena, we are

very often ignorant of the nature of their connexion, or reciprocal productions ; but what kind of connexion, relation, causality, resemblance, or analogy can be conceived between phenomena of such a different nature, and, taken in two points of view, so essentially opposed as are on one part the physiological functions attributed to the different parts of the cerebral organ, the motion, for instance, and the real concussion or supposed product in the centre of a nervous system ; and, on the other part, such sensible modifications, such intellectual or moral act, which is supposed to be the consequence of it. And if it is pretended to make here a contradictory and absurd connexion, even in the expression that is given to it, in comparing thought to an organic secretion, we would demand, that the material product of such a secretion, should be represented to us, by the aid of some one of our external senses ; let any one show us how the received impression is transformed into perception, recollection, image, judgment, in the same manner that we can see physiologically the alimentary paste successively transformed into chyle, blood, and into the different secretory and excretory fluids, which always remain accessible to the senses in their different metamorphoses."

After this language, any one would say, that physicians were thoroughly acquainted with the relations which exist between the nerves of the spinal marrow, sensibility, and voluntary motion ; between the olfactory nerve, the optic nerve, and odor and vision ; between the spermatic vessels and all the properties of the *semen* ; between the intestines and the aliments assimilated to the specific nature of each individual. On the other hand, *concussion*, *digestion*, and *secretion*, appear to be their favorite causes of all physiological phenomena, since, at every moment, these expressions are made use of in their objections against the cerebral physiology. It is thus, for I must continue to be faithful to my method of replying, that the eyes

and the ears digest the light and the vibrations of air, and that they secrete vision and hearing ; that a moderate shock, suspends or destroys the faculties of perception, memory, imagination, judgment, which is a proof in favor of the proposition, that the shock produced in the centre of the nervous system is essentially opposed to these functions ; it is in this way that speech, and gestures, are the chyle and the blood successively formed from the alimentary paste of thought, the affections, and passions ! Such is the sagacity of men, who pretend to deny the functions of the brain, because its mode of action has nothing analogous with the heart, the stomach ? &c. And these same men, who protest so learnedly against all kind of connexion, relation, causality, resemblance, or analogy, between phenomena so entirely different in their nature, and derived from points of view so essentially opposed, as the physiological functions attributed to different parts of the cerebral organ, for example between any intellectual or moral act and a motion or shock, how can they admit, a few pages farther, that the signs, indicating division or a real separation of the cerebral localities belonging to different faculties, can be inferred, with a sufficient degree of certainty, from the states of delirium, insanity, or partial mental affections ? Is it, then, the name of M. Pinel which has the magic power of creating a relation of causality and analogy between the brain and the intellectual and moral acts ? Would not they be much more consistent, if they frankly denied that the diseases of the brain, as well as intoxication, strong emotion, narcotics, &c., could induce madness, either total or partial, or any other alteration of the intellectual or moral faculties ?

“If there was an organ,” continues the same author, “a fixed seat in the brain for each kind of affection, each disposition of sensibility, or for each of the modifications of the temperament and the character, of which the experienced physician could only read the

signs but in the whole of the organization, in the acknowledged predominance of some internal organ ; if there was, I say, such an established cerebral sign for each passion, whence could those continual variations come, that each of us constantly feels in his own dispositions ? As the man, who has the nerve of sight, or hearing, well formed, always sees or hears equally well, or nearly so ; for the same reason, he who has the organ of courage, ought to feel himself equally strong and courageous, or nearly so, at all times. Why is it, then, that while the protuberance, belonging to such a particular sentiment or passion, remains the same, there are so many and such continual vicissitudes in the corresponding affection or sensitive disposition.”*

This passage abounds with inaccuracies and suppositions, that the physiology of the brain disclaims. The affections and dispositions of the sensibility, the modifications of the temperament, have never been derived from a cerebral organ. The author of this article would have done better for himself, and for the honor of the *Dictionary of Medical Sciences*, if he had commenced by studying, or at least by reading my works, before he had arrogated to himself the right of censuring the physiology of the brain. He would have found his *homo duplex*, and the means of establishing his reasonings rather on facts than on metaphysical dreams.

Another obstacle equally chimerical, is to dream of a physiology of the brain : I understand, that it is still professed in the schools of physiology, that the faculties of the mind are by no means an object of physiology ; that being of a nature entirely opposed to the other functions, they are above the sphere of observation ; that we can know nothing of them ; that, consequently, it would be absurd to endeavour to find any connexion of them whatever with organization. Intelligence and volition are free operations of the mind,

* Dictionnaire des Sciences Medicales, Tom. xxxvii.

simple powers, spiritual, in no way in contact with matter, and without any dependence upon it. Thus, with a haughty modesty they refer to another tribunal all the moral and intellectual part of man.

As to the other functions, the same professors instruct their pupils with an admirable ability. Let us see, then, if the difference of our knowledge in the physical phenomena, and in the moral and intellectual phenomena, is such that it ought to oblige us to renounce these last.

First, all our knowledge of the functions of organization is empirical; for the structure of the organs has never enabled us to discover any function, not even the circulation of the blood, or the irritability or the contractility of muscles. It is from experience that we know that the liver secretes bile; it is from experience that we learn the multiplied functions of the lungs. All our positive knowledge in natural history, in natural philosophy, in chemistry, in medicine, has its source in experience or empiricism. How inconsistent, then, is it to reproach the physiology of the brain, that the qualities and faculties, and the localities of their organs are first proved by experience and then confirmed by general principles, which could not even be established but by experiment! Our acquisitions would be much more sure and stable; they would never have receded, if we had never gone astray on the hollow and sterile ground of speculation. I refer to ideology and metaphysics. Let us continue the examination of the nature of our knowledge. We know that the stomach digests; that the food is transformed into chyle and into blood; that the blood furnishes the materials of an infinite number of other secretions; that the semen contains the germ of all the physical, moral, intellectual, and hereditary dispositions of the individual. We know that we smell with the nose, hear with the ears, and see with the eyes. We know farther, that all these functions are deranged when their organs are diseased. Thus we

know the facts, and some conditions which are requisite in order that these facts should occur ; but the why and the wherefore are almost always unknown to us.

Well, this is precisely as much as we know in regard to the intellectual faculties and moral qualities. We know, that they are not the accidental product of the fancy of the mind, of sensorial impressions, of education, or other external circumstances ; we know that they are innate and determined by nature herself ; that their exercise is dependent on organization ; that they arise, grow, decay, simultaneously with it ; that the intellect and the will, the perception, the memory, the judgment, the imagination, the attention, &c., are sound, changed, enfeebled, exalted, or void, according to the condition of the brain. We know, that in the different species of animals, the instincts, propensities, and faculties increase and diminish with the perfectibility or the debasement of this organ. We know by analogy, by a thousand proofs, physiological and pathological, by an infinite number of individual facts, by comparative anatomy and physiology, that the brain is a collection of many organs, and that each instinct, propensity, and faculty is manifested by a particular organ. Observations, infinitely multiplied, or the most constant experience, have taught me the seat of each of these organs, &c. All these propositions are decisively proved to all those, who have given themselves the trouble to study all the branches of the physiology of the brain. I defy physiologists to know more of any other function of organization.

Nevertheless, still revolting against the idea, that even the manifestation of the superior faculties of the mind, reason, will, &c., depend upon organization, and making no account of idiotism, insanity, madness, delirium, &c., the metaphysicians believe they are enabled to combat us by an irresistible argument. The *ME*, [individual consciousness,] say they, remains always the same, although by a continual succession of composition and decomposition, the organs of the

body are so changed in the course of a few years, that there does not remain a single atom of those that formerly composed it. Hence the ME, the consciousness, the mind with all its attributes is not in any connexion, in any relation with matter.

Similar causes produce similar effects. Hence new compositions are made after the type of the preceding ones. Hence there results the same form for the nose, the mouth, the hands; you smell, see, hear, and walk nearly in the same manner as you smelled, saw, heard, and walked ten years ago. So also, the new compositions of the brain are formed after a preëxisting type, and hence there results the same moral and intellectual character; provided that your argument is completely founded in fact.

In this argument, you are only correct so far as you really preserve the consciousness of your personality at all times. But your ME undergoes modifications always in harmony with the modifications of the organization. From the moment of your birth to the age of puberty, from this to old age, how many modifications take place in your tastes, affections, propensities, passions, and talents! There are cases, where, by an alteration of the organs, the ME is transformed into another ME; for instance, when a man believes himself transformed into a woman, a wolf, &c.; there are other cases, where the old ME is entirely forgotten or replaced by a new one; not an uncommon accident after severe disease, especially in cerebral affections. Thus, this objection, so captivating, is rather an illusion, so far as it seems to prove the independence of the mind on organization. But let us return to it.

So long as the brain was considered as a spongy mass, inorganized; as a collection of impure viscera; as a secretory organ, as a pulpy mass, as a simple envelope of the origins of the nerves of senses, as the reservoir of the vital spirits, of the nervous fluid, how could any one have the most obscure presentiment, that there

existed a connexion between a similar mass and the moral and intellectual faculties?

When they began to consider the brain as making a part of the nervous system, it was not difficult to suspect, that it performed an important function. It was seen, that the nerves of the spinal column were necessary to voluntary motion, that the nerves of the five senses exercised the functions of smelling, seeing, taste, hearing, and touch. With a very little reflection, one could be easily convinced, that the brain served as the organ of intelligence. But the moral man, the propensities, affections, passions, and sentiments remained reserved for the temperaments, for the heart, for the plexuses and the ganglia of the chest and the abdomen.

It is but a few years, since all those who were at the head of insane hospitals, or who wrote on insanity, considered mental alienations, either as diseases of the mind, with which the body had no part; or they placed their immediate seat in the chest or the viscera of the abdomen. This general belief not only diverted the attention from the true seat of these diseases, but it deprived the physicians of mad-houses of one of the most precious and most fruitful means of discovering the true fundamental qualities and faculties, the relation of their alterations with the changes of the brain, the correspondence of partial alienations, or monomanias, with the plurality of cerebral organs, and their partial suffering, &c.; and finally of exposing the erroneous doctrines of philosophy, which are still professed in all the universities.

I rejoice in having been the first, who has attacked these errors of our most respectable authorities, and of having effected the most happy revolutions, not only for the study of the nature of mental diseases, but also for their treatment. Let it be remembered with what perseverance I have combated these fatal prejudices, in my public lectures, and in my works. Let any one also read the work of M. Spurzheim on Insanity, &c.,

and let any one compare the old articles, *Mental Alienation, Madness, Insanity, Delirium, Monomania, &c.*, in the *Dictionary of Medical Sciences*; the work of M. Pinel, and in many respects, inestimable; with the new opinions of M. Esquirol, and with the excellent works of MM. Georget and Falret, and their striking difference will abundantly testify, that positive knowledge, frankly announced, always ends triumphantly.

The greatest miracle that the metaphysicians or the reasoners have achieved, is, in persuading anatomists and physiologists, that organization and its results are quite the opposite of what they really are. We see objects single, we see them straight, we see them at a distance, but reasoning has proved that we see them double, upside down, and immediately in the eye, &c. It is thus that anatomy demonstrates, that the nerves do not derive their origin in the cerebral substance; that the different parts that constitute the brain arise, strengthen themselves, and terminate in different places; which ought to lead to the presumption, that these different distributions of the nervous filaments of the brain, are destined to different functions. The metaphysicians, on the contrary, have established that the mind being simple, its seat in the brain ought to be equally simple, and the physiologists who had, as they supposed, discovered that the brain is the organ of the mind and of human nature, had the complacence to reduce their organ of the mind to a single point, and this single point was charged with being the rendezvous of all the nerves, the common centre, the organ of common sense, the seat of all the operations of the mind. But at the moment when they flattered themselves with having preserved the simplicity of the mind, it never occurred to them that a point, in order to be single, is not necessarily an immaterial point. It has always resulted from this artifice of the ideologists, that their dupes, the physiologists, have had, and still have a horror of all idea of a plurality of organs for the different faculties of the mind.

The mind being simple, the ideologists conclude from this, that all its acts, thought, understanding, will, judgment, reason, imagination, were also necessarily simple, and could not in their exercise be subject to matter. I do not know how they could elude the examples of stupidity, madness, delirium, in short of derangement of all the functions, in consequence of a defective organization, of the diseases of the brain, of intoxication, &c. If we oppose to them analogous functions in brutes, it must either be admitted that animals possess mind; or, those who consider animals too degraded to be endowed with so noble an inheritance, must make of memory, imagination, judgment, instinct, propensities, passions, the will, intelligence, material functions, without perceiving that this method of reasoning is but a snare set by the materialists; for, from the materiality of the faculties of animals, it would not be a great step, to the materiality of the faculties of man. However it may be, the theory of the simplicity of the qualities and faculties of the mind, does not admit of seeking many organs for their manifestation.

Those who did not believe, that the brain was a particular system, independent of the other nervous systems, who took the whole mass of the hemispheres for the result of the concurrence of all the nerves of the body, how could they attribute other functions to the brain than those proper to the nerves? This error was in harmony with the complete ignorance of an internal source of sensations, ideas, propensities, and talents, and it wonderfully confirmed the ruling axiom which has always paralyzed the physiological researches of the brain; that nothing is in the mind which has not previously existed in the senses.

Hydrocephalic individuals have been observed, that enjoyed almost entirely their moral and intellectual faculties; still it was believed that, in these cases, the brain was disorganized, dissolved, &c. With such an opinion how could it be believed, that the brain con-

tributed in the least towards the functions of the mind? The false interpretations put upon certain lesions of the brain, brains that were said to be ossified, with the mind in a state of integrity, children endowed with many intellectual faculties, and whose crania had been found entirely deficient in brains, &c., fully confirmed the opinion already so much accredited by philosophers.

In general, history teaches us, that anatomical and physiological knowledge has almost always been upon a level with the philosophical knowledge of the time. As intelligence and will were the only powers of the mind which were known, there was only sought in man and animals some measure for the abstract idea, — *intelligence*, — without regarding any instinct, propensity, or faculty in particular. They sought for this measure in the absolute size of the brain; in its different proportions with the body, the nerves, with the other cerebral parts, with the face, &c.; they sought it in the facial line of Camper, and they neglected the study of the different parts of the brain, as compared with the different faculties of the animal.

It is true, they discovered, very early, many cerebral parts of different forms, colors, consistence, and organization, such as the bridge of Varolius, the great crura, the pretended optic thalami, and corpora striata, the corpora quadrigemina, &c., and they were tempted to proclaim these parts as different organs; but they discovered at the same time, that these parts were found in the brains of the mammalia, which was a proof that the brains of the mammalia were composed of the same parts, as the brain in the human species; consequently, said they, it is not right to admit these parts as organs of the different human qualities and faculties.

On the other hand, it was believed that the brain of certain species of animals, was deprived of some of the parts of the hemispheres, although these same animals were endowed with qualities, that were attributed to these parts in the brain of man.

How could they avoid this difficulty? Anatomists and physiologists did not then know the laws of the organization of the nervous system; they did not know the office of the grayish, reddish, gelatinous substance; they could not divine that all these different parts, that were found as well in the brains of the mammalia as in that of man, are only the apparatus of the origin and reunion of the nervous filaments, of which the hemispheres are composed; and of which the different bundles or particular distributions, are the true organs. But, if anatomists had compared the brains of the other mammalia with that of man, and the brains of the mammalia with each other, they would have ascertained that all these brains did not, by any means, contain the same parts on all the same organs. They would have found also that the absence of the posterior lobes of the hemispheres, in some species of the animals, is only apparent, as I demonstrate when treating of the organ of the love of offspring.

I have come now to the obstacle which has had the most powerful influence in retarding the physiology of the brain, and which our philosophers and our physiologists will not soon surmount, even now.

At the commencement of the *Treatise on the Plurality of the Cerebral Organs*, vol. II., I have cited many ancient and modern authors, who had hinted, that the different moral and intellectual powers of the mind ought each to have their particular organ in the brain. I have asked myself after this, how it could be conceived that not a single anatomist or physiologist had discovered a single organ, and that all had terminated their researches by despairing of the possibility of this kind of discoveries; and, at the same time, laid this to the charge of those false philosophers, who, for thousands of years, have been, and still are sustained in our schools and in philosophical works.

In the first volume, I have already cited the opinions of different philosophers on the faculties of the

mind. Understanding, will, sensibility, desire, voluntary motion, intelligence active and passive, speculative and practical reason, reasoning, imagination, liberty, thought, sentiment, action, attention, comparison, memory, judgment, reflection, recollection, desire, preference; these are nearly the qualities and faculties, that were supposed to be the only faculties of the mind of man. Some adopted a single one only — sensibility, attention, for instance, as the fundamental faculty and origin of all the rest. Others admitted two, three, seven, as the general source of all.

When it was required to suppose the existence of, or even to seek for an organ, it was for one of these faculties of man, that a search was made; they sought then an organ for perception, memory, judgment, imagination, understanding, will, attention, and so on.

But, in these researches, no one consulted experience; no one observed the difference in the brains in comparison with the differences in the moral and intellectual characters of individuals; no one made any use of comparative anatomy and physiology; no one conceived the idea of making an instructive collection of the crania of men and animals that had been remarkable for the energy of any one faculty or quality whatever. Every one gave free scope to his imagination. It was the pineal glands, the corpus callosum, the cavities of the hemispheres, &c., which by turns presided over such or such a faculty. What one built up, another destroyed, since neither the one nor the other could base their suppositions on facts, sufficiently constant or multiplied.

In fine, it was impossible, and it will always be impossible, to discover an organ for any of the faculties that I have just named. Instead of being radical, fundamental, primitive faculties, they are only abstractions, generalities, general attributes of true fundamental powers. Let me explain myself: the faculty of the relations of space, and the faculty of the relations of

sounds, are two particular talents, two primitive fundamental talents. But, in the faculty of the relations of space there is perception, since it is necessary first to perceive the relations; there is attention, without which these relations would not in the least determine the individual; there is recollection and memory, otherwise no animal would find again the place of his habitation; there must be comparison and judgment, otherwise the individual would confound one place with another; and the landscape painter who combines or who invents situations, ought to have imagination. So also the musician would not be a musician, especially a composer, if he did not perceive the relations of tones, if he had neither recollection nor memory, if he did not judge of melody and harmony by these relations; if he had not imagination to invent new combinations. Thus attention, perception, memory, judgment, imagination are nothing else than the different modes of action of every one of the fundamental faculties whatever. They are essential to each of these faculties, when they are graduated to the power or ability to create, — to that which we call *genius*. When they are weak, there is a feeble degree of attention, of perception, of memory, a defective judgment, and no imagination.

This explains how it can happen, that one may have strong attention, easy perception, a tenacious memory, and extremely correct judgment, an inventive and brilliant imagination in one particular talent, and be almost imbecile in another.

It is the same with all the talents and faculties. Perception, attention, memory, judgment, imagination, intellect, intelligence, thought, comparison, reflection, preference, understanding, are not powers existing by themselves. They necessarily belong to an object, to a particular talent, and are only attributes of it. But philosophers have always neglected the talent or the particular determinate object, or, in other words, they have made an abstraction of the fundamental faculty,

and have rested on general attributes, on generalities, on their abstractions.

This way of proceeding is the most convenient and the most natural to the human mind. Children always commence by seizing the general properties before they observe the differences of individual objects. They know the young of animals, in general, before they know the calf, the colt, the duck, the chicken, in particular, &c. They know the dog before they know the grey-hound, the bull-dog, the terrier. We all know what a bird is, without thinking of the difference between a tom-tit and a nightingale, between a chaffinch and a greenfinch.

But in nature, these abstractions, generalities, general attributes have no reality, no proper existence. Extension and weight are general attributes; but these two general attributes exist only in abstraction, in thought. In nature, extension and weight are inseparable from a determinate body. The true naturalist seeks to know these bodies, knowing very well that it is impossible for him to find extension and weight in an isolated existence.

Every reader will now understand why the philosophers and their imitators, the anatomists and the physiologists, have never been able to discover any organ, nor any external sign for the faculties of the mind, such as were adopted, and such as they are now established, in all the schools of philosophy.

The same fault has been committed, when the instinct, the affections, the passions have been considered as positive things; these are so many abstract notions. Instinct is not an *unit*. There is an instinct of propagation, an instinct of love of offspring, an instinct for constructing, an instinct for travelling, &c. It is these particular instincts which have an independent existence, which determine the peculiar nature of the individual; it is these only which have their appropriate organs, and which it is possible to discover.

Further, the passions are nothing abstractedly con-

sidered ; they are the very energetic activity of the propensities and talents. There is passion in the propensity for propagation, as there is passion in the talent for music. How then can we find an organ for the passions ?

The affections are simply the modifications of the different organs. Pain and pleasure, joy, fear, chagrin, modesty, anger, despair, pity, &c., take place when certain organs are affected in a particular manner. Consequently there cannot be an organ or a seat peculiar to the affections. Organs only exist for the propensities and the talents which can be affected in a thousand ways, or, the activity of which can be increased even to passion.

When I have exposed the fundamental qualities and faculties, that I have ascertained up to the present time, I shall be able to present the true philosophy of man in its clearest proof. What I have just said will, for the present, be sufficient to convince the reader, of the defects of the philosophy of our metaphysicians, and he will conclude with me, that it is by their chimerical doctrines, that the progress of elevated physiology, or, the study of moral and intellectual man, has been most fettered.

Let any one imagine to himself, from a consideration of all these difficulties, how far we ought to expect, on the part of anatomists, physiologists, and professed metaphysicians, an exact judgment on my discoveries. In the number of those who are in a favorable position for verifying and sufficiently multiplying experiments, how few are there, who are endowed at the same time with a taste for the study of nature and with a physiological spirit ! How rare, also, it is to find men of a fitting age, who, by an uninterrupted cultivation of science, have preserved a sufficient degree of flexibility, to abandon old errors and receive new truths !

Let us count also among these obstacles, the reputation which those professors enjoy, who despise the

new doctrines, so called, who, by their decisive and peremptory tone, sink their disciples in security and pernicious indolence ; let us reckon also, the pretensions and the still more despotic decisions of learned societies and academies, who, ridiculing, with Boileau, the decrees for the maintenance of the doctrines of Aristotle, prepare the same spectacle for their successors.

It will be seen how necessary it was to remove difficulties before I could determine one single fundamental quality or faculty. Happily these obstacles were presented one by one. So long as a quality or faculty, or its organ, remained undiscovered, I never had the least anticipation of what I should eventually find, nor of the place where I should discover the organ. Entirely abandoned to nature, it was requisite that I should have a considerable number of striking facts to afford me a slight presentiment, and a much greater number still to put me on the proper track. How many times, after years, have I been obliged to reject that which had appeared to me well established ! How many times have I been tempted to renounce all my researches, and to admit what those who had gone before me had maintained, that it was impossible to discover the traces of the operations of the mind !

However, the numberless observations that I had made from my infancy on man, in my intercourse with my brothers and sisters, with my play-fellows and school-mates, and those that I had made on animals of every species, awakened me from my despondency. Finally, the powers of facts became sufficiently powerful to convince me of the reality of my object and the possibility of obtaining it.

Thus, in consequence of the accumulation of facts, light came gradually upon me. I discovered sometimes one fundamental quality or faculty, sometimes another ; at one time, one organ, at another time another ; and as these discoveries were multiplied and confirmed, the prejudices, the scholastic errors, and fears disappeared.

As so large a number of naturalists and physiologists still doubt the possibility of discovering the functions of the different parts of the brain, we shall proceed to the discussion of the means, that we have believed ourselves able to employ, up to the present time, and those which we have employed with the greatest success.

OF THE MEANS NECESSARY TO DISCOVER THE FUNCTIONS OF THE DIFFERENT PARTS OF THE BRAIN, OR OF DETERMINING THE FUNDAMENTAL QUALITIES AND FACULTIES AND THE SEAT OF THEIR ORGANS.

Of Anatomy, considered as a Means of discovering the Functions of the different Parts of the Brain.

I shall speak here of the anatomy of the brain under four different points of view ; of the anatomy of the brain, as a simple dissection or examination of the conformation of the brain ; of the physiological and pathological anatomy of the brain ; and of the comparative anatomy of the brain. The first must necessarily be as barren in leading us to the discovery of cerebral functions, as the three others may become fruitful. But up to the present time the physiology of the brain has received no advantage from anatomy, under any point of view whatever, for the simple reason, that no one has yet had the least idea of the nature of the functions of the brain ; that is to say, not the least idea of the fundamental qualities and functions, which belong to the different parts of the brain.

Of the Simple Dissection of the Brain as a Means of determining the Moral and Intellectual Fundamental Powers, and of discovering the Seat of their Organs.

There are but few cases, where the structure of parts, enable the anatomist to understand the functions which depend upon them; and when that happens, his ideas are merely conjectures. Thus the bones and the ligaments are examples of this kind. Before having seen the motion produced by muscles, their figure does not enable us to divine either their irritability or their contractility. The dissection of the stomach, the liver, the kidneys has not taught the functions of these viscera. What purpose would it serve to know the structure of the eye and the ear, if experience had not taught us their uses? Would the most profound perspicacity ever have attributed the sense of smell to the pituitary membrane of the nose, and the sense of taste to the nervous papillæ of the tongue, when even to this day anatomists still dispute, to which nerve the gustatory faculty belongs? The tendons and ligaments have been confounded with the nerves, for ages; and the organization of the heart has had so little influence in leading anatomists to a knowledge of its functions, that, to the time of Harvey, the arteries were considered as conducting tubes of air.

It was infinitely more difficult still to discover the functions of the cerebral parts by their simple dissection. There are in the brain neither muscles nor levers for motion; there are no excretory canals, no external apparatus, no extension, no relaxation, no concussion or oscillation of fibres, no refraction of the rays of light, no vibration of air, no liquid in motion. The functions of the nerves and of the brain differ essentially from every other function of organized parts; they are of a peculiar nature, beyond the reach

of our senses and our imagination. Although exceedingly varied, and diversified in themselves, we could hardly conceive of the possibility of any difference in the intimate structure of their innumerable fibres, and consequently would not imagine any difference in their functions, if we did not reflect that the myriads of fibres, among which we do not observe any difference in animals and vegetables, have nevertheless a difference among them, which is evidently proved by the diversity of their effects. In whatever region we examine the two substances that constitute the brain, we can hardly perceive any difference between them, either in their structure or their chemical composition. The nervous fibres, it is true, are sometimes more or less firm, white, or bony; they are directed sometimes in one sense, sometimes in another; the convolutions of the hemispheres are sometimes narrower, or broader, or serpentine, &c. What inference can the anatomist draw from all this?

It is then demonstrated, that the knowledge of the parts and of their form, direction, consistence, color, &c., never leads to the knowledge of their functions. Almost always has the knowledge of functions preceded that of the parts. It was not necessary to know the structure of the eye, nor the mode of existence of the optic nerve, to know that it was the organ of sight. For a long time it was not believed, that the nerves were necessary to the functions of the senses, because it was thought, that the sanguineous vessels carried the impressions to the heart, the supposed seat of the soul.

It was also without the assistance of any anatomical guide, that I made all my physiological discoveries; and these discoveries might have existed for ages, without their concordance with the organization of the brain being ascertained.

Whenever it has been attempted to advance the pretended knowledge of organization before that of functions, it has been altogether conjectural, and wore

the impress of the prejudices of the age. It is in this way, that the heart has been constituted the seat of courage, love, sympathy, cruelty; the liver was formerly the seat of anger and physical love; it is thus, that, even to this day, the moral and intellectual faculties are made to arise from a mixture of the humors on the temperaments; and the dispositions and passions take their rise in the abdomen or from the solar plexus. If anatomy were a sure guide in establishing the uses of different parts, would Willis have said that the vital spirits, necessary for motion, were secreted in the cerebellum? Would Galen have connected the organ of smell with the anterior cavities of the brain? Would the soul, alternately dislodged from the pineal gland, the corpus callosum, the annular protuberance, &c., have been replaced by Sæmmerring in the vapor of the cavities of the hemispheres, and by Ackermann in the medullary substance which lines the interior of the same cavities! Would memory have been placed sometimes in the gray substance, sometimes in the posterior lobes of the hemispheres; judgment sometimes in the fibrous substance of the hemispheres, sometimes in their cavities? This is one of the sources of the errors of Descartes, of Albert-le-Grand, of Servetto, of Auranti, of Van-Helmot, of Lancisi, &c.

We ought at least to expect, as I have mentioned in another place, that anatomists, on seeing the great diversity of the cerebral parts, would have been the first to deduce from it the diversity, and consequently the plurality, of the organs of the powers of the mind. But, in our day, we cannot persuade ourselves any more than Vicq-d'Azyr, of the plurality of the cerebral organs; a very striking proof, how little the simple knowledge of any mechanical structure, is capable of enlightening the physiologist.

It is rather by observing physiological phenomena, that we arrive at a more just idea of the brain. Accordingly, it has been requisite for me to collect a great number of physiological and pathological facts, before

I could come to any rational induction respecting the laws of its organization. I owe almost all my anatomical discoveries to my physiological and pathological conceptions; and it is only from these, that I have been able to convince myself of the perfect accordance of the moral and intellectual phenomena, with the material conditions of their manifestation. It is, therefore, more and more apparent, that they are but false suggestions of those of my opponents, who, pretending that I had arbitrarily interpreted my anatomical discoveries, endeavour to throw distrust over my physiological discoveries on the functions of the cerebral parts.

The Anatomy of the Brain in its Physiological Applications, as a Means of discovering the Fundamental Powers of the Mind and the Seat of their Organs.

Without doubt the anatomy of the brain, would have afforded anatomists and physiologists the first impulse for meditating on the meaning of its organization, on its agreement with the forms of the head, and the modifications of development of its different parts, if they had ever brought to the subject other views, than those purely mechanical.

The organization of the brain, although analogous to that of the other nervous systems, is still so wonderfully finished and perfected, that we are enabled to divine its high destiny. But what are generally the preparatory acquirements of those who devote themselves to anatomy? To be a great anatomist, it is only requisite to have a great deal of patience, good instruments, good eyes, and dexterity in the use of the hands. It has never been considered, that philosophical studies, natural history, natural philosophy, should be regarded as indispensable, or even useful, to the anatomists. And even if the dissectors of the brain should have been imbued with the philosophy

of Locke, of Condillac, &c., they would have had one reason more for always remaining strangers to all idea of its use. The mind having always been considered by a philosopher as having no relation with the body; and all its moral and intellectual powers having been derived from the impressions on the five senses, an especial organ for all these functions, was superfluous.

The division of the brain into two hemispheres, into many lobes, into many other parts very distinct in their form, their direction, consistence, color, and the varied although constant distribution of its two substances, should have induced among the anatomists a suspicion, that all these variations might be destined for different functions; the more, because the division of the other nervous systems, into two equal parts, their subdivisions into particular nerves, and their varied and different uses, afforded them a striking analogy. But very few physiologists have manifested a presentiment of this. With most of them, this light, so clear, has thus far been obscured by the gloomy ideas of the metaphysicians. The spirituality of the mind, according to their conceptions, required a simple seat, a single point, a centre of the common senses, &c. These ideas have occasioned the loss of all the fruit, that they would have been able to collect from antecedent knowledge, so rich in its application.

They would have been enabled to observe, that the fibrils of the brain, manifest themselves later as distinctly as the fibrils of the other nervous systems, whose functions are earlier called into action; that precisely in the same manner as the different subdivisions of the nerves, the viscera, the spinal marrow, and the senses are not simultaneously developed, so also the different parts of the brain are not developed simultaneously; that consequently, in the same manner as the functions of the other nervous systems and subdivisions, are destined to different functions which succeed each other, so also the brain and its subdivisions ought to be equally

destined to different functions which succeed each other. We may observe that in new-born infants, the frontal parts of the brain are much less developed than the middle lateral lobes, and that from the age of four months to ten or twelve years. That the cerebellum is generally very slowly developed, towards the age of puberty; that the whole cerebral mass diminishes in old age, but that this diminution does not affect all the parts of the brain at the same time; they could observe that in man, certain parts are generally more developed than in woman; that other parts, on the contrary, are more developed in woman; that the volume of the brain is very different in different individuals; that the hemispheres in different individuals sometimes present small contracted convolutions, sometimes large and prominent ones; sometimes large and prominent in one part of the head, and small and contracted in another. They could have remarked that the heads of different individuals have quite variable forms, and that these variations correspond with the variations of the form of the brain; that the heads, and consequently the brains, of different nations, present very different forms, &c.

Ought not all these circumstances to awaken the attention of anatomists? Ought they not to be able to excite their curiosity on the signification of all these different parts of the brain? Should they not have viewed these physiological facts with a reference to these anatomical phenomena? The inactivity of the mind of the new-born child, and his great need of nourishment and sleep; the growing activity of the faculties of children, especially the faculty of observation and abstraction; the successive apposition of the instinct of physical love towards the age of puberty; the successive but not simultaneous diminution of the vigor of our moral and intellectual faculties; the difference in the sentiments, propensities, and the intelligence of man and woman; the difference in the moral and intellectual character of different individuals; the dif-

ferent energy of certain propensities and faculties in the same individual ; the difference of national character, &c. But nothing of all this has happened. Now only since the fundamental powers and their localities have been determined by experience, that all these circumstances have been referred to the brain, and serve admirably to confirm the physiological discoveries, and to demonstrate their harmony with the cerebral organization.

Of the pathological Anatomy and Physiology of the Brain, as Means of discovering the Fundamental Powers of the Mind and the Seat of their Organs.

The pathological anatomy and physiology of the brain, so far from putting anatomists or physiologists on the track of any fundamental quality or faculty, or the seat of their organ, have not even been sufficient to convince them, that the brain is exclusively the general organ of the moral qualities and intellectual faculties. They have even seized upon the lesions and the diseases of the brain to prove that, with very considerable alterations of the brain, all the faculties of the mind can exist and be exercised in their full integrity. It has even been necessary for me in my second volume, to enter into a long discussion to refute these pretended observations, that are brought in support of this error.

I have been able to show, that, previous to my anatomical and physiological discoveries, there did not exist the necessary knowledge, to determine with exactness the malformations, lesions, and diseases of the brain, nor the means of judging with correctness of the influence, that the lesions and diseases of the brain exercised on the moral qualities and intellectual faculties.

As to mental alienations, madness, idiotism, universal or partial insanity, I was still obliged to combat

the highest authorities, MM. Pinel, Esquirol, Fodéré, to establish that all the mental diseases always have their immediate seat in the brain. The public were so little enlightened by pathological facts observed in the brain, that it was still boldly maintained, that cases existed, where a hemisphere of the brain and even the entire brain, had been destroyed, and where not the least trace of brain was found; where it had been dissolved or disorganized by collections of water in the cranium; where it had been ossified; without the cessation of the exercise of the mental faculties.

Would it not have been expected that physicians, who are the most inclined to observe and study mental alienations, and to make examinations of the dead bodies of the insane, would be the first, not only to find the immediate seat of these diseases, and the most convincing proofs of the plurality of the organs, but also, the fundamental qualities and faculties? They present you with numerous cases where persons, who manifested an involuntary excitement in some particular, that is to say, who were on the borders of insanity, and have been preserved from it, by resorting to occupations which were foreign to the object which had taken so great an ascendancy over them. Could they not have been able, with Bonnet, to infer from thence, that in thus acting they allow certain parts of the brain to repose, whilst at the same time they put other parts in activity? They every day see cases, where certain qualities certain faculties are injured, whilst other qualities, other faculties remain sound; cases where the individuals are rational or irrational on a single point. They show you examples of rational alienation, since those who are effected by it, perceive and combine in every other respect, as rational beings. They speak to you of cases where the affective faculties are singularly troubled, whilst the intellectual faculties are in the most perfect calm, and *vice versâ*. They have every day under their eyes cases of imbecile people, who are only so in some respects, and

who in other relations, sometimes evince an astonishing degree of intelligence. Every day they attend insane people in whom sometimes physical love, or murderous rage, or the passion for robbery, or haughtiness, or religious fanaticism, &c., stifles every other idea, every other sentiment.

Could they make no use of similar facts so strongly marked, nor seize with avidity, that which nature so often presented them? But no; philosophical errors held them captive in spite of the demonstrations of nature, the most opposed to their prejudices.

The observing mind of M. Pinel had been forced to observe the falsity of the doctrines of Locke and Condillac. Not content with ascertaining the insufficiency of the division of the faculties of the mind, into affective qualities and intellectual faculties, he expressly says that the different alterations, which the moral and intellectual faculties sometimes undergo, invest themselves with such varied forms, that the subdivisions of their principal divisions are as different, and as strongly marked among themselves, as the principal divisions are. See him then ready to shake off the chains of metaphysics! and at the same instant, he and his worthy and respectable pupil, M. Esquirol, bend to the yoke, and pretend that they have observed, in a healthy state of the other functions of the mind, partial lesions of the physical sensibility of perception, attention, memory, of the principle of the association of ideas, judgment, imagination. The reader will recollect, that I have proved in the second volume, that in none of the cases, cited by MM. Pinel and Esquirol, did there occur more than one of these common attributes of lesion, whilst the others could have existed without alteration.

We see then with melancholy astonishment, that neither pathological anatomy, nor the pathology of the brain have in the least contributed to discover the true fundamental powers of the mind, and how then

could it be possible from such means, to conceive the idea of particular organs, and their particular seats in the brain?

Of the Mutilations of the Brain as a Means of determining the Fundamental Qualities and Faculties, and the Seat of their Organs.

It is a subject of constant observation, that, in order to discover the functions of the different parts of the body, anatomists and physiologists have always been rather disposed to employ manual means, than to accumulate a great number of physiological and pathological facts, to combine these facts, to reiterate them, or to await their repetition in case of need, and to draw slowly and successively the proper consequences from them, and not to announce their discoveries but with a wise reserve. This method, at present the favorite one with our investigating physiologists, is imposing from its materiality, and it gains the approbation of most men, by its promptitude and its apparent results.

But it has also been constantly observed, that what has appeared to have been incontestably proved by the mutilator A, either did not succeed with the mutilator B, or, that he had partly found in the same experiments, all the proofs necessary to refute the conclusions of his predecessor. It is but too notorious, that similar violent experiments have become the scandal of the academicians, who, seduced by the attraction of ingenious operations, have applauded with as much enthusiasm as fickleness, the pretended glorious discoveries of their candidates.

But besides, these cruel experiments, when they are made on animals of an order comparatively low, are hardly ever conclusive for man. In chickens, pigeons, rabbits, guinea pigs, and even in newly-born animals of a superior order, the whole animal life is

not by any means under the dominion of the brain. I am willing to admit that some results can be obtained, in most cases however, extremely doubtful; even in relation to the phenomena of irritability, sensibility, the functions of the viscera, those of voluntary motion, respiration, &c.; but never will I grant to the physiologists, that the lesions and the mutilations of the brain, either designedly or accidentally occasioned, are the means, the only means, of enabling us to become acquainted with the functions of its constituent parts.

In order that experiments of this kind should be able to throw light on the functions of each of the cerebral parts, it would require a concurrence of many conditions, impossible to be fulfilled. It would first require that we should be enabled to restrain all the effect of the lesion, to that portion only on which the experiment is performed; for, if excitement, hemorrhage, inflammation, &c., affect other parts still, what can we conclude? and how can we prevent these inconveniences, in mutilations, either artificial or accidental?

To be assured that we have entirely destroyed an organ, it would be requisite that we should know beforehand, with exactness, all its extent and its sources. But who, up to the time of our discoveries, has had the slightest knowledge of the direction of the different nervous fasciculi, which form the convolutions? Who has had the least idea of the different origins of these fasciculi, and of the multiplied points of their reunions? We are accustomed to make horizontal sections; but never can we remove an entire organ by these sections; for, except in cases of complete hydrocephalus, the nervous fibrillæ of the convolutions are not ramified on a horizontal plane; on the contrary, they plunge diagonally, or perpendicularly, or obliquely, towards their sources of supply, and their original points of origin. Thus, how can we destroy any organ whatever, without at the same time injuring those that are in contact with it, without pene-

trating deeply into the brain, and without causing the death of the animal?

It would be necessary, that we should be able to make an animal, whose brain has been wounded and mutilated, who is filled with fear and suffering, disposed to manifest the instincts, propensities, and faculties, the organs of which could not have been injured or destroyed. But, captivity alone is sufficient to stifle the instinct of most animals. The elephant no longer thinks of copulation; the nightingale, even in the midst of his amours, ceases to sing.

It would be necessary, that, while injuring or destroying some particular portion of the brain, we should be able to confine the injury to the *animal* function of the part affected, that is to say, the instinct, the propensity, the faculty which depends on this, and in no way interfere with the *vital* functions of the brain; for when, after a concussion, blow, cut, &c., there supervenes an inflammation, a benumbing paralysis, vertigo, delirium, mania, or convulsions, how, with this derangement of the *vital* functions of the brain, can the animal functions of any of these functions continue to be manifested?

In similar violent experiments, it would be necessary to destroy the same organs, as completely in one of the hemispheres, as in the other. But thus far none of the physiologists, who have undertaken these mutilations, have taken into consideration the circumstance, that all the organs of the brain are in pairs; and that each hemisphere contains organs precisely similar.

Finally, and especially, it would have been requisite to know what could be found, and what ought to be sought for, in the brain. It would also have been necessary, that the mutilators should be divested of every metaphysical prejudice; that they should have a detailed knowledge of the fundamental powers. Where is the physiologist, where, the anatomist, who has been able to follow this direction, and who has not wished to find generalities and abstractions?

These remarks will be sufficient to prove, that those mutilations, which Sir E. Home has lately proposed, and would make us believe were his own invention, and which are always cried up anew, can never lead to the discovery of the special function of any part of the brain whatever. What shall we think then of those pretended learned people, who contemptuously protest against the proofs of all kinds, which I give of such or such a fundamental quality or faculty, and of the seat of its organ, for the reason, which according to them is very plausible, that these proofs are not founded on similar mutilations and on the derangements which have resulted from them?

I shall proceed to demonstrate immediately, that there exist in the different species of animals, *natural* mutilations of the brain, according as these animals are more or less removed from man, and we shall see what valuable advantages the naturalist can derive from the comparison of these fragments of the human brain.

Can Comparative Anatomy and Physiology at present serve as Means for discovering the Fundamental Moral and Intellectual Powers, and the Seat of their Organs?

When it was maintained, that man had the largest brain, and that this was the cause of his superiority over other animals; when it was maintained, that the angles of the facial line of Camper indicated the degree of intelligence of man and animals, the comparative anatomy and physiology of the brain was made use of. I have proved the inefficiency of these two means. There were indeed some authors, such as Herder, Bonnet, George-le-Roi, &c., who had caught a glimpse of the utility of similar researches; but these have not been practically followed out, and they cannot be so yet with the most ordinary success.

In accordance with their principles, philosophers opposed the instinct of animals to the understanding and will of man. The instinct, as a personified power, was regarded as performing the vicarious office of the mind, the understanding, and the will equally personified. As all the propensities, sentiments, and talents were regarded as modifications of the activity of the mind, so also all the mechanical aptitudes of animals, all their propensities and interior impulses were modified operations of instinct. Both in man and animals, all investigations ended in these generalities; all reciprocal relations were denied; a complete line of demarcation was established between man and animals, and no connexion could be tolerated between them. To believe that animals partook of certain propensities and faculties in common with us, was a heresy. Their different instincts were no more specified or distinguished from each other, than the qualities and faculties of man. It was the part of materialism, to find an analogy between the propensity for propagation in man, love for his offspring, local memory, &c., and the instinct of propagation, the love of progeny, and the local memory of animals. It is because a man *wills*, that he kills, that he defends his property, that he builds, that he sings; it is from instinct, that the animal kills, that he defends his property, constructs, sings, travels, &c.; hence it follows that there is no comparative physiology of the moral and intellectual powers, and hence there is no comparative anatomy of the brain.

What shall be said to this kind of reasoning, when it is founded on the authority of those, who have the most cultivated comparative anatomy? Cuvier expressly says, that instinct has no visible mark in the conformation of the animal.* By and by I shall have occasion to do justice to this decision, which is falsified in every animal, from the humming-bird to the

* Animal kingdom.

cassowary, from the mouse to the elephant ; a farther proof that physiology ought to precede anatomy.

So long as this comparative physiology shall fail or be defective, comparative anatomy will be subject to insurmountable difficulties. Let us suppose, that an animal, the dog for instance, has many faculties and consequently many organs in common with us, such as the instinct for propagation, the love of offspring, of attachment, of a local sense, &c., it is evident, in the first place, that these organs will be otherwise modified in the dog, than in man ; in the second place, as the dog wants many organs with which man is endowed, there ought to result in the animal an entire form of the brain, very different from the entire form of the human brain. The situation of the organs must necessarily undergo variations very difficult to ascertain. Organs, which in man are placed near the middle of the forehead, are also similarly situated in the dog ; but, as the organs which in man occupy the external lateral of the forehead, are wanting in the dog, they are placed last at the side, close by the temples, as I shall demonstrate, for the organs of the senses of the relations of space.

This difficulty would not be so great, if nature had created only a small number of species of animals, so that in each species the gradual perfectibility would be effected by the addition of one new organ to the others ; in this case, the organology being once known in man, the interpretation of less complex brains would become very easy. But, in this multitude of species, nature has made distributions and mixtures of organs almost infinitely various : here is an animal where the organ of love of offspring is contiguous to the organ of the instinct for propagation ; there, the organ of the love of offspring is entirely wanting, and that for propagation is immediately in contact with another, which altogether changes the form of the brain and the head ; here the organ of the sense of locality, is contiguous to the organ of

construction ; there the organ of music is placed between these two ; and so on.

The further an animal is removed from man as it respects his qualities and faculties, the more difficult will be the interpretation of his brain. Such a head will be in part composed of organs entirely different from those of man : and how is it possible to have an idea of a propensity or a faculty, that it is impossible for us to feel ? Nevertheless the same brains will present an analogy in those parts, the functions of which are analogous to those of man.

In general, the nearer the species approaches man, as it respects the qualities and faculties, the easier will the interpretation of his brain become to the physiologist, who, by long experience, has learnt to interpret the brain of man.

My readers will now perceive that, in order to derive all the advantage possible from comparative anatomy and physiology, the study of a great number of brains is indispensable ; but this study can never be made in dissecting and examining one brain to-day, and another to-morrow. Neither memory, nor the most scrupulous attention, will suffice to retain all the parts and all their forms, in order to be able to compare them with the parts and the forms of another brain. On this account I have commenced making a collection of brains, partly in plaster and partly in wax ; but the expense of a similar collection, even should it be incomplete, generally exceeds the fortune of an individual. Brains, preserved in brandy, or in a solution of corrosive sublimate, lose much of their form, and are very difficult to handle. Thus we can only hope from time, what indifference and prejudice still refuse us. Since our contemporaries are not disposed to admit the importance of this kind of research, we must resign the imperfections of the physiology of the brain to those after us who will have the taste and the courage to continue, what, without contradiction, was infinitely more difficult to commence.

Now I shall undertake to show, how I have overcome a great part of the difficulties of which I have just spoken, and I shall explain the means which have the most assisted me in my researches after the fundamental qualities and faculties, and the seat of their organs.

Exposition of the most convenient Means for determining the Fundamental Qualities and Faculties, and the Seat of their Organs.

I had hardly obtained certain indications of other moral and intellectual powers, than those professed by the philosophers, when I perceived the necessity of directing all my researches, in the first place, towards the discovery and the determination of the instincts, the propensities, and the positive talents; being convinced that for these only organs exist, and seats can be determined.

I constantly said to my friends, indicate to me the fundamental powers of the mind, and I will find the organ and the seat of each. I have experienced many more difficulties in endeavouring to resolve the first problem, than the second; although for this I have encountered, as it respects certain qualities and faculties really fundamental, obstacles which as yet I have not been able to overcome. But as to the primitive, fundamental, radical powers, I know the organ of many modes of manifestation, without being able to reduce them to their fundamental power. There also exist qualities and faculties, upon which I am not yet able to pronounce whether they are simple fundamental powers (*sui generis*), or whether they should be considered as simple modifications of certain primitive qualities or faculties, or, as a mixed result of the simultaneous influence of many fundamental powers.

The important search always is for these independent powers, for, it is only for them, that organs exist in the brain. But where shall we derive this knowledge? Wherever we inquire, we get this common answer: "What need have you of seeking other faculties of the mind than intelligence and will? Man is an architect, mathematician, poet, solely because he has applied his understanding to architecture, mathematics, and poetry. He gives himself to love, he takes care of his children; he robs, he is ambitious, because such is his choice." I had in vain to ask, why it was that such an one applied himself by choice to architecture, rather than to any thing else; why another took pleasure in robbing, in places of honor, &c.

In order to invalidate this unsatisfactory appeal to the will and the understanding, I referred them to the mole, the rabbit, the ant, who construct their subterranean galleries, with astonishing foresight; I referred them to the beaver, the bee, the penduline, who construct their cabins, their hives, and their nests, with inimitable art; I referred them to the quail, the cuckoo, the stork, and the swallow, who, after a long absence, return to their old habitation; I referred them to the blood-thirsty weasel, the cunning fox, the bold wild boar, the singing nightingale, and the imitating mockbird. But still my ears resounded with the cry of the philosophers, *it is instinct*; and one would have believed, that all the means for explaining these phenomena, had been exhausted.

What should I do in this uncertainty? I regarded then as very precarious all that, up to that time, was known concerning the moral and intellectual part of man, because the generally received ideas were in contradiction with nature. I did what I engaged my adversaries to do, I gave myself entirely up to observation, awaiting, with patience and resignation, the results that it would afford me. I have confined myself to the collection of facts, and the noting of the

circumstances under which I observed them. I have been careful in my wishes to explain observations, for fear of misleading my judgment rather by the sagacity of my mind, than of instructing myself by the faithful image of reality.

The facts on which I have founded my assertions are mostly of such a nature, that they can be repeated and multiplied voluntarily by each of my readers. I have not desired to seek in another hemisphere that which could be found at home. The duck and the bull are organized by the same laws as the flamingo and the cameleopard. If we examine with the same attention the crania of Germans, Frenchmen, Russians, Italians, &c., with which we scrutinize the most minute circumstances in the crania of the Caribs, the Becherais, the Hottentots, the Tongouses, &c., we shall have less trouble in multiplying observations, and, as they will acquire a more durable value, they will lead also to more useful results.

The numerous facts that I bring to the support of each fundamental power and the seat of its organ, prove how thoroughly I am convinced of the necessity of multiplying experiments. But these facts will, at most, serve to gratify curiosity, if I confine myself to the consideration of each separately, instead of comparing them with each other, and endeavouring to separate that which is accidental and particular from that which is essential and general, in order to deduce from them laws and truths that are constant. He who contents himself with single facts, as it has been too much established in principle to do, may increase the number to infinity, without deriving any fruit from his labor. He cannot, by so doing be in the least enabled to foresee or produce analogous facts. Not distinguishing the essential from the accidental, he will for ever remain as much a stranger to all that he has not yet seen, as he who enters for the first time on the field of nature; he will be constantly groping in his science; he will never see the whole, which it is only

possible to seize by the connexion of individual facts ; and never will be enabled to create a philosophical idea of his object, in order to arrive at new views or to a true discovery.

There exists a sect of philosophers who pretend that individual facts, however numerous, can never lead to general laws ; because we can never observe all the facts possible. It is on this account that philosophers in the possession of their abstract and general ideas, boast of being infinitely above the common observer. They suppose, then, that nature does not act consecutively, and by laws constantly the same ; they assign to each fact a separate cause. If then the justice of principles is to be doubted, because they have not been derived from a great number of individual facts, what will become of all human knowledge ? Whence have the natural philosopher, the chemist, the physician, derived their principles ?

It requires, it is true, much sagacity, much circumspection, and a profound knowledge of nature, to discern the phenomena which enable us to deduce the laws, in consequence of which they exist. Almost always this requires many facts, observed under varied circumstances. This is the reason why, when I have only a few facts in favor of a proposition, that I am careful to say : *I have often seen that ; I have always seen that ; I have never seen that differently ;* similar expressions surprise a reader prone to adopt precipitate opinions.

But a principle merits all our confidence, when it enables us to prognosticate phenomena with correctness, or even to cause them to take place, and to foresee, precisely, the necessary results from the circumstances, as well as to determine the circumstances from the results. When one pursues researches with perseverance, when one is sufficiently fortunate to be able to continue his observations during twenty, thirty, or forty years, under the most varied relations, upon educated people as well as upon the ignorant, on the

rich as well as on the poor, to repeat them in a thousand different ways among the most dissimilar nations, and find them always confirmed; when he carries back his observations to the most ancient times, and when he studies the busts, the portraits, the engravings of men who have immortalized themselves by eminent qualities or faculties; when he has studied the biography of these men, and followed them from their youth to their death; when he has made himself acquainted with the means that have favored their development; and when in all this he never finds exceptions, and never meets with contradiction, he may confidently expect that he is on the sure way of truth. The transcendental or speculative philosophers have always excited a smile in me, when I have heard them say, in order to manifest their contempt for the physiology of the brain, that experiments and facts have only a subjective value; that the observer merits, at most, the name of being curious; that I am always right as it respects experience, but, in a philosophical point of view, I am always wrong; does not that signify that their *soi-disant* philosophy of nature, is in direct opposition to reality?

First Method, derived from common Language, to attain to the Knowledge of the Fundamental Qualities and Faculties, and the Discovery of the Seat of their Organs.

In conformity with the ideas, of which I have given my readers a foretaste at the commencement of the first volume, I shall at first solely adhere to the manner, in which the different propensities, sentiments, and talents of men and animals are habitually named. I have always thought that this language was a creation of the faculties of man, and that he did nothing more than express by sounds, whatever took place within him. We always hear men of great talents,

of marked characters, spoken of nearly in these terms : Such an one is born a musician, poet ; he has an innate talent for mathematics ; he has a passion for constructing, for travelling ; he is strongly given to women ; he has an insatiable ambition ; he is revoltingly proud ; he is excessively obstinate, &c. Do not these forms of expression suppose, that these qualifications delineate with precision the prominent traits of the character ?

It was individuals, endowed with one or the other of these qualities or faculties, that I set myself to observe. When I was convinced that an eminent talent, or a strong propensity, was really the work of nature, I examined the form of the head of the individual, and had it strongly impressed on my memory.

In the introduction to the first volume, I have related how it was that I was enabled to ascertain those among my school-fellows, who possessed a great facility of learning by heart. I ought then to have been able to have known, that the particular qualities and faculties are not a consequence of the entire form of the brain, and that, consequently, they are not manifested by a general form of head ; but the number of observations, that I had made up to that time, was not sufficiently large to establish my ideas. It was a matter of course, that I fell into errors, palpable mistakes ; but it was not very difficult to get rid of them, in order to regain the correct way. For instance, I had accidentally observed, that, in some musical composers of great reputation, the superior part of the forehead was compressed by the sides, whilst the inferior part, immediately above the external border of the eyes, was very broad. Perhaps, said I to myself, this triangular form of forehead is the sign of a great musical talent.

But I soon found great musicians equally renowned who had the top of the forehead very broad. This observation enabled me to perceive, that I had not yet found the external mark of the musical talent. My friends were quite disposed to console me for this

folly ; the exceptions, said they, prove the rule. I never was of this opinion ; a student of nature from my infancy, I could not suppose that there was any thing indeterminate or vague in her works ; her laws ought to be immutable and fixed ; and every exception, bearing upon an essential point, was a proof to me that the seat of an organ had not yet been ascertained. This severity towards myself determined me to continue my researches, and multiply observations, until I should be enabled to find a constant and common sign ; as for instance, in all the great musicians that I had opportunity successively to see. It would have been impossible for me to make similar discoveries in a less extensive sphere, and in a less populous city, or one less frequented by strangers of distinguished talents. The more my observations multiplied, the more was it probable that I was on the point of succeeding, in determining a fundamental faculty or talent, and in indicating, with exactness, the seat of its organ. Happily, my first researches were directed to those talents and qualities, which, so frequently occurring, drew my attention towards them. I have pursued the same method in discovering the talent for mathematics, construction, colors, &c.

Persons who were not at all familiar with the uniformity of the laws of nature, have sometimes objected to me, that what was true at Vienna, might be false, or, suffer great modifications at Paris, or London, &c. Such a supposition has never embarrassed me.

But there is another remark which it is proper to make to young naturalists. We ought not to expect to find in all individuals, endowed with a given quality or faculty, that the organ which corresponds to it is developed in a remarkable degree. Few people know the different degrees and the greatest possible energy of the qualities and faculties ; those who have been brought up, secluded in the paternal mansion, know them the least. It is necessary to have had frequent

opportunities of comparing one's self with others, to judge correctly of the point on the scale, where one is placed himself, in this respect. The man of mediocrity places the extreme limit at a point, beyond which the man of genius passes, at his very entrance in the career. That which genius, in its innate capacity, in itself hardly perceives, appears to the man of moderate capacity, exaggerated, fantastic, unnatural, mad, inconceivable. We ought then, to be on our guard, and only choose for the subject of our observations, those men whose eminent quality or faculty is generally acknowledged, and well proved by their deeds or productions.

In the second place, and this remark is as correct as the former, we shall not be fortunate in our researches, except when we choose for subjects of our observations, individuals, who only enjoy, in an elevated degree, one single quality or faculty, and who, as it respects the rest, are ordinary men, or even below mediocrity. In these individuals, the distinguishing organ is exposed by itself, is more strongly developed; and even if one has only seen twenty similar individuals, he must have necessarily acquired very little tact not to be able to distinguish, on some part of the head, a prominence which is the same in all. If, on the contrary, we select individuals endowed with many marked qualities or faculties, we shall be embarrassed, in consequence of many well defined developments presenting themselves. There is a further difficulty, when the organs of well-marked faculties or qualities are placed by the side of each other, the prominences of each organ in particular are effaced, and a collective eminence arises, which is rounded. Hence it happens, that, from the inspection of the head of a man of very distinguished talents, the beginner will not perceive any thing very remarkable, because he does not distinguish any single well pronounced prominence, whilst the experienced observer will not be led into error. It is much easier to distin-

guish the organ of music, the sense of the relations of space, of poetry, in men in other respects of limited capacity, than in those who possess a certain combination of talents.

Second Method; Counter Proof.

Nothing has been easier for me, than to find a counter proof for controlling a fundamental power and the seat of its organ. I examined individuals who possessed in a very moderate degree, the quality or the faculty that engaged my attention; people, for instance, who had not only a very feeble talent for music, but even an antipathy for this science. When, in the same region, where, in those who excelled in music, there existed a considerable development of the brain, I could not find in others any prominence, but on the contrary, a plane surface, or even a depression; when I constantly found this conformation, it served to confirm the idea that I had adopted. We much more frequently find subjects, who aid us rather by the counter proof, than by the positive proof, if not by the almost entire want of development of organs, at least by their inconsiderable development; for, heads of mediocrity are as frequent, as those of genius are rare; besides, notwithstanding the numerous talents with which a man may be endowed, he is always weak in some particulars; and such a subject may sometimes be useful for the positive proof; sometimes, for the counter proof.

Third Method derived from the particular Conformation of the Head of the Individual.

When I discovered on the head of a person a protuberance, produced by the development of one part of the brain, I attempted to learn in what respect this individual was endowed with some eminent faculty or quality. But, in order successfully to make

such an inquiry, much prudence and practice were necessary ; for, our friends and our enemies estimate our qualities and talents very differently. There are cases, also, where a talent or a disposition, with which we are endowed in a very high degree, has never had an opportunity of manifesting itself. Oftener still, and this happens especially with the common people, an individual has exhibited the most unequivocal proofs of some particular faculty or propensity, without his having observed, that the least difference exists between him and other individuals of his class, until finally chance discovers it to him.

I have, in society, made use of many expedients, in endeavouring to know the talents and the inclinations of people. I converse, for example, on different subjects. In ordinary conversation, we generally engage in those subjects, which have little or no connexion with our faculties or our dispositions. But when the interlocutor touches upon one of our favorite subjects, we take at once a lively interest. Where is the man, who does not love to display all the activity of his mind, when he finds himself within his own sphere ?

The occupations, by which we get our living, generally prove nothing, either in relation to our faculties or our ruling propensities. Sovereigns and fathers make their subjects or sons, generals, magistrates, advocates, physicians, architects, painters, &c. But the occupations to which we resort for recreation, are almost always in conformity with our talents and our tastes.

When an individual has devoted himself to a particular pursuit in spite of all obstacles, and has acquired in it a certain power, he is certain that he has followed his vocation ; that is to say, that he has obeyed the impulse of his innate faculties and propensities.

Do you wish to ascertain the character of a person without running the risk of being deceived, even though he should be advised of your intention, and put on his guard ? Lead him to talk of his infan-

cy and early youth ; ask him to relate his school-boy tricks, his conduct to his parents, his brothers, and sisters, his relations, and comrades, and the emulation with which he was animated ; make him tell you the history of his friendships with certain children, and of the hatred he felt for others ; question him on his plays, &c. It will rarely happen that he will dissemble in these particulars ; no one can doubt, that he has to do with a man who knows perfectly well, that the character remains at bottom the same, however the objects which interest us change with age and the social relations. When, besides this, I farther observe what a person sets a value on, or despises, praises, or excuses ; what events interest him ; what society he seeks ; if I see him act especially on occasions where there are conflicting interests ; if he is an author, and I read his book, &c., the whole man is unmasked before me.

When once I have discovered the dominant faculty or inclination, I still make use of the two former methods.

I thus run through families, schools, asylums for orphans, foundling hospitals, houses of correction ; and I particularly observe, wherever I find those subjects that are distinguished by some innate propensity, or by a particular conformation of the head ; I compare them all with each other, always with the view of collecting new facts and proofs, in support of the reality of a fundamental quality or faculty, and of the seat of its organ.

Fourth Method ; Collection of Heads cast in Plaster.

We are not at all times equally well disposed to discover the characteristic marks of a head ; neither have we at our disposal, living people, whenever we would wish to renew our researches or enlighten our doubts. Often it is impossible to collect together a great num-

ber of individuals, endowed in a high degree with the same faculty, in order to compare them with each other. These difficulties induced me to make a considerable collection of casts. Whenever I became acquainted with any one, who possessed in an eminent degree any quality or faculty whatever, I took a cast of his head. In order to have the entire form of it, I shaved off the hair, to which many willingly submitted, or, I obtained precisely the external configuration of the head by feeling and measuring. In a few years I thus formed a collection of four hundred casts, of men of all conditions and classes, from the beggar to the prince; the deaf and the dumb; idiots, children of all ages, boys, girls, women, &c. I laid schools, houses of correction, hospitals for the insane, all of them under contributions for this object. I possessed those casts of individuals whose qualities and faculties I had already observed; in this number, there were found persons of the poorest education, as well as those educated with the greatest care.

I placed side by side all the casts of individuals in which I had observed a prominent quality or faculty. If the external sign of it was already known to me, I carefully observed if it existed in all these heads. When I had still to look for the organ, the problem was, certainly, much more difficult; in this case I observed the following principles, viz., heads which coincide in respect to a single marked quality or faculty, ought also to coincide with the form of the cranium in a certain place; in consequence of this I ran over all the regions of my heads, I compared them all; and when I perceived a marked difference of the form in the same region, I abandoned this region. It is necessary for every one to observe for himself, to know how many times it is requisite to resume his researches, in order to be able to find what is common in all these heads. Often I left on my table, for whole months, from ten to twenty of my casts; I examined them daily at different moments, and in the

most different dispositions of mind, until, finally, I was struck, and sometimes at the moment when I least expected it, with the protuberance common to them. It is very natural that it should be so ; to-day one discards such a pretended sign that he has just ascertained to be false, and to-morrow, another. Thus, one says to himself from day to day, it is not this, it is not that, neither is it this, and when, finally, all the characters ascertained to be false, have been set aside, the true one appears of itself.

When in this manner we have discovered in ten or twenty heads, a common character, we return with increased ardor to the methods above indicated. These casts of living people are of the greatest assistance. By their means we become familiar with all the forms of the head ; it has often happened to me to discover on them prominences which certainly were formed by the brain, but which until then I had not perceived, and at that instant, even, I commenced their study, to discover their signification.

Fifth Method ; Collection of Human Crania.

As in my researches I had not cranioscopy for my object, but the discovery of the functions of the integral parts of the brain, it was my aim to learn the form, as exactly as the seat, of each organ ; but, in the heads of living subjects, the muscles, the skin, and the hair are sometimes so thick, that it becomes very difficult to judge with precision, of the protuberances of the cranium. Some regions, such, for instance, as the base, are neither susceptible of being seen nor felt.

This imposed upon me the necessity of making a collection of crania ; but how could I procure them ? By so doing every body is shocked. Supposing even that we could collect some in the hospitals, in the institutions for the insane, in the houses of correc-

tion, it would rarely happen, that we could obtain exact accounts of the biography of such objects; and how rarely do we find physicians sufficiently accommodating to assist a kind of researches, to which most of them attach no value? With perseverance, and by means of the facilities with which an enlightened minister favored me, I was enabled to form a collection of the crania of very remarkable men. Many persons, whose heads I had moulded, died; I compared their crania with the cast of the living head, and I rectified my ideas of the situation and the form of organs, as well in the brain as in the cranium. At the same time I observed the difference that takes place in the form of the organs, from the living to the dead subject. Finally, this collection was the occasion of numerous researches that I made, on the brains of idiots, of maniacs, of subjects attacked with every kind of mental disease, researches which led me to make invaluable discoveries in diseases of this kind. It is thus that my collection of crania, which is a bugbear in the eyes of the vulgar, becomes the source of the most useful and important discoveries.

It is probable that, for a long time, no naturalist will be able to form a collection as rich as mine; for there is little hope, that men will ever be able to overcome the difficulties with which a similar undertaking is attended. But this ought not to discourage any one; a collection of casts, made with discrimination and judgment, will be sufficient. Let the head of the dead body be shaved, and plaster be applied over the whole head, so as to form a hollow mould in two or three pieces, and a most exact cast can be obtained from this mould. Many families submit willingly to this operation, and the more readily, as it is the most infallible method of transmitting to posterity a bust of the deceased person, having a perfect likeness. If our ancestors had thus moulded the heads of great men, what a treasure for the observing philosopher would

they have transmitted! Unfortunately, we possess but very few correct busts. When the artist composes, he is allowed to obey exclusively the rules of art; but when he is engaged to transmit to posterity the portraits of men who have lived, he is obliged servilely to copy nature: in such cases, to wish to idealize his model, is to disfigure nature. But, unfortunately, artists, instead of rendering homage to truth, allow themselves to be still subjugated by the imaginary rules of art, and the pretended laws of the beautiful. They are too proud to mould heads, and simply execute a mask; and yet it is certain, that so long as they will not resolve on this course, we shall have either imperfect or false imitations; and two busts of the same man, coming from the hands of different artists will always differ. I observe still that the greatest artists, painters, designers, and sculptors, when they meet with uncommon forms, and which appear to them disagreeable, consider them as defects, as errors of nature, and believe that they ought to modify the proportions. And yet usually these uncommon forms, which offend the eye, are precisely the expression of the moral and intellectual character.

Observations on the aforesaid Methods, of discovering the Fundamental Faculties and Qualities, and the Seat of their Organs.

All the methods above indicated suppose, that the favorable development of an organ, always proves the possibility of the favorable manifestation of a quality or faculty. As I have, in a very detailed manner, proved in many places of this work, that this is really the case, I deem it superfluous to advert again to this subject.

Although the means in question have constantly cleared the way for the discovery of the fundamental qualities or faculties, they have not always been

sufficient however to distinguish the radical power from its simple products. To what fundamental power should we refer architecture, sculpture, painting, design, mechanical dexterity? Or are the phenomena, that we regard as simple, different modes of one and the same radical power, effected by as many particular organs? I have been obliged, as already stated, to make my first researches upon men endowed with very eminent qualities or faculties; consequently, on subjects in whom the organs had the maximum of the manifestation of their activity; but this activity is often so far removed from being essentially the fundamental power, that it requires a good deal of sagacity to distinguish the one from the other. And still I found myself obliged to give to this kind of manifestation, which usually accompanies the uncommon development of an organ, a name which should designate it with precision. Thus, for example, it is unquestionable, that the excessive activity of a certain organ manifests a propensity to rob, and that of another organ, a propensity to kill. I was then obliged to name these organs after this kind of activity. In the main, I was right, since these propensities result from this given degree of development of these organs; but, at this period, I had not extended my observations sufficiently far, to be able to assume such a point of view, as to regard this excessive action of the organs as a gradation of the manifestation of a fundamental quality. It was not until long after this, that I was enabled to resolve these difficulties; and if I have succeeded in it, it is as much by reasoning, as by observation. Thus, in certain cases, opinions will always remain divided, on the question of knowing what ought to be the denomination of the fundamental quality or faculty, which we only perceive, in a very energetic mode of its action, as being the consequence of an extraordinary development or activity of its organ.

Means of discovering the Fundamental Qualities and Faculties, or the Fundamental Powers of the Mind, as well as their Seat. Continuation.

The following methods have assisted me less in discovering the fundamental qualities and faculties, than, in proving their discovery.

Sixth Method.

I had made it a practice, for a long time, to mark on crania the form and situation of the organs, as fast as I discovered them, when I began to examine how far these places on the cranium, corresponded with the subjacent cerebral parts. Let any one imagine my joy and astonishment, when I observed, that the form of each of these external marks that I had discovered, must necessarily be such as it is, on account of the cerebral parts underneath; the last being first formed. When the protuberance is a segment of a sphere, it covers convolutions that are spirally rolled upon each other, as in the organ of construction; when the external sign is conical or pyramidal, there are conical or pyramidal convolutions underneath, which give rise to it, as the organ of the relations of sounds. Sometimes the external mark is simple, and sometimes it is double; in each case, according as the congenerous organs of the two hemispheres are near or distant from each other, of which the organ of the love of offspring is an instance. The same thing takes place relative to the direction of the organs, whether they are perpendicular, horizontal, oblique, from before backwards, or from above downwards.

We always attentively examined if the elevated, prominent, and broad places of the cranium, corresponded to cerebral parts that were ample, wide, and developed. We have never found exceptions in sound brains, and in those of subjects of middle age. When the forehead is low, and contracted, the

convolutions which it covers are always small, indicating moderate intellectual faculties. The contrary takes place when the forehead is high, wide, and projecting. In all cases where the sentiments, propensities, and instincts predominate over the superior intellectual faculties, the posterior part of the head is largest, as in animals and in persons, that are very sensual but of limited intellect, and the convolutions that are placed there, have acquired the greatest development of convolutions in the brain. (Pl. VIII. and IX.)

In cases where any faculty or quality was manifested with much energy, we found the cerebral parts, situated under the mark, much more developed and prominent, than in the neighbouring parts.

My readers will recollect the changes that the brain undergoes in the different ages. I have proved that the cranium changes form gradually, as the cerebral parts successively develop themselves or decay. The two sexes, sometimes having the frontal parts, sometimes the superior occipital parts of the cranium more prominent, evidently manifest in the same regions cerebral parts more developed, or more elongated; but I shall go more into detail on this subject, in the treatise on the particular fundamental powers. It remains constantly certain, that the largest, the most prominent parts of the cranium indicate in the individual convolutions the most developed, and cerebral parts the most active.

Seventh Method ; comparative Anatomy and Physiology ; natural Mutilations of the Brains of Animals.

I have demonstrated above, that the comparative anatomy of the brain of man, and the different species of animals, could not be attended with any happy result in the discovery of the fundamental powers of the mind and the seat of their organs, so long as anatomists were not directed in their researches by

the previous determination of the instincts, propensities, sentiments, and talents of man. But this knowledge, once acquired and applied to animals, becomes an inexhaustible source of instruction, and the most irresistible proof, if the fundamental qualities and faculties, and the external marks of their organs have been determined in harmony with the laws of the whole animal kingdom.

The origin of the mechanical aptitudes, instincts, the inclinations, and the faculties of animals, and the essential difference of these powers, are by no means subject to so many doubts, as the origin and the essential difference of the moral qualities and the faculties of man. It is almost generally admitted, that in animals every thing is innate. To know then their different instincts, their different propensities and faculties, would be to know their fundamental powers ; and the same analagous powers in man would be considered equally as his fundamental powers.

However, except two organs, I have not made any discovery of this kind in animals, although from my earliest youth I have had a great number constantly under my eyes. I have seen dogs that were good, bad, affectionate, cross, courageous, and cowardly, some endowed with an astonishing local memory, and others, getting lost every where ; I have seen rabbits, sows, cows, cats, both good and bad mothers : birds that were docile and indocile, singing birds, and those that did not sing ; sparrow-hawks or little falcons passionately fond of the chase, and others of the same species that could not be taught, &c. ; but all this has such a natural appearance, that we hardly reflect on it. It was only the different qualities and faculties of man, especially their extreme feebleness or their extraordinary energy, which impressed me so strongly as to arrest my attention. To have one's attention fixed on these differences, and to be convinced, is almost simultaneous. Hardly had I advanced a few steps in my method of discerning and rectifying the

qualities and faculties of man, before the qualities and faculties of animals opened my eyes at once, and the notions of their habits and manners, that I had collected, became to me a source of the most extensive and frequent use.

Nothing then was more natural than to compare the instincts, the propensities, and the acts of intelligence of animals, with the propensities and the intellectual faculties of man. Every thing which is common to man and animals, said I to myself, ought to be referred to the same law, with the exception of the modifications which arise, in part, from modified organic apparatus, and, in part, from the influence of other qualities or faculties. The same viscera and destined also to the same organic functions; the same senses and occupying the same places in the head, and destined for the same object; then again, the same propensities and the same faculties in man and in this or that species of animals, being found; it must follow, that the same organs and the same seats of these organs, exist in man and in animals.

Here, then, is the first shoot of a system of comparative anatomy and physiology. Natural approximations opened to me a vast field to rectify and confirm the observations, that I had made on man. The more a quality or faculty is common in animals, the more did I acquire the means of multiplying my proofs; because I was enabled to prove, in a greater number of species, the propensity or the fundamental faculty and the seat of its organ.

Very often the approximation of the brain, and especially the propensities and the faculties of animals, towards the brain and the qualities and faculties of man, contributed much to dissipate my doubts and decide my hesitation. The brains of animals are less complicated, their instincts, their propensities, and their faculties are very strongly marked, open, and distinct; their crania, consequently, are more distinct in the species, and even in the individuals, compared with

each other ; the external marks of their organs are more isolated, and easier to ascertain. Any one, then, can easily conceive how much the study of comparative anatomy and physiology may afford assistance and assurance to the physiology of the brain.

I never shall forget that I have to combat both the prejudices of philosophers, and the greatest authorities among the naturalists ; and this will be an additional inducement in the exposition of organology, to accumulate proofs upon proofs, that the qualities and the faculties of animals have very visible and palpable marks in the conformation of their heads. Neither prejudices nor authorities will succeed for a much longer time in subjecting the instincts, and propensities, and the varied and different intelligences of animals to a single occult imaginary power, nor in withdrawing them from the universal laws of organization.

As those animals which differ much from man, have the organs of vegetable or organic life entirely different from the viscera of men, we may, with probability, presume, that they have also the organs of animal life different from those of man. This explains to us why we observe in animals, phenomena which surpass our understanding, without speaking of what takes place within them, and which our imagination can never reach. In these cases, comparative anatomy and physiology admit of no application to man. Still these same animals may have some points of contact with animals more analogous to the human species, and with man himself, as far as regards the most essential and the most indispensable qualities, such as the instinct of propagation, the love of offspring, the carnivorous instinct, the instinct of construction, of sociability, of self-defence, &c. Insects, fishes, amphibious animals, afford us examples of this. The same qualities are found in birds, many species of which furnish the best proofs of the organ of singing, the carnivorous instinct, the organ of the sense of the re-

lations of space, the organ for the instinct of love of offspring, &c.

Let us now see, if comparative anatomy and physiology do not afford an infinitely more fruitful and more conclusive method of discovering the functions of the cerebral parts, than those violent mutilations so much boasted of and yet so sterile in results. The animals the nearest allied to man are, as it respects animal life, as it respects the moral qualities and the intellectual faculties, but fragments of man. Their brains are deprived of many parts with which the brain of man is endowed. All these brains are, then, natural mutilations in comparison with the human brain. They are farther natural mutilations, in comparing those of one species with those of another. Thus, if we wish to ascertain the seat of the intellectual faculties of man, we may compare the brains of the dog, the horse, the ox, the ape, &c., with that of man ; if we have not the brains, we may compare the conformation of their heads, and we shall see that the heads of animals are very slightly elevated : that, for the most part, they recede immediately above the orbits, and that they are flattened ; that they never form a vault extending beyond the eyes. On the contrary, observe man, with his forehead elevated three inches above the orbits, and often, arched in front. We shall observe farther, that the more the forehead of the dog, the monkey, the horse, is elevated above the eyes, the more these individuals will partake of some resemblance to human intelligence. Is there now any necessity of extirpating from a man the cerebral parts placed opposite the forehead, or of waiting until an unfortunate accident shall destroy them, in order to learn that these parts of the brain must be considered as the organs of the most elevated of the intellectual qualities of man ?

Do you wish to distinguish the organ, which in man inspires the taste and the talent for music ? Compare

the head, or rather the external inferior angles of the forehead of a great musician, with the heads of the dog, the ape, the ox, and you will perceive that in these last, the parts of the cranium, and, consequently, the cerebral parts placed underneath it, do not exist. Compare, further, a singing bird, the black bird, the thrush, the nightingale, &c., with the gross-beak or haw-finch, the sparrow, the owl, &c. Compare the male nightingale, the male mocking-bird with their females, and you will soon be convinced, that the heads of the males are more square, more angular, more prominent above the eyes, and that those of the female are constructed conically. Observe the narrow forehead of the dog, the ape, the badger, the horse, in comparison with the square forehead of man, and you will have the solution of the problem, why these animals are neither musicians, nor painters, nor mathematicians, &c. Compare the carnivorous birds and mammalia, with the frugivorous birds and mammalia, and if, in a dozen cases, you are not struck with the constant difference of their heads and their brains; if you do not ascertain which is the cerebral part that causes this difference in the instincts of animals, you are not destined to penetrate the enigmas of nature.

In order advantageously to compare the brains and the crania of animals, with those of man, it is necessary to be familiar with the nervous systems of many species of animals in comparison with that of man. Although all the cerebral organs in man and animals are found precisely in the same place, this rule appears in different species of animals to undergo great exceptions, as I have before remarked. These exceptions are caused by two circumstances. The first is the direction, either horizontal or perpendicular. In animals where the position is entirely horizontal, as the ox, the cerebellum is very superficially situated behind the posterior lobes of the hemispheres. Not attending to this circumstance, naturalists have pretended that the posterior lobes were wanting in these animals, and

comparative anatomy, so far as the organ of the love of offspring was concerned, was thought to be in fault. In many species of birds, as in hens, turkeys, &c., the cerebellum is entirely isolated behind the brain. The lateral parts of the head contain the organ of hearing, &c.

The second circumstance that might induce us to believe, that the cerebral organs have not the same situation in man as in animals, is, that the brains of animals are deficient in many of the organs peculiar to man. The entire series of human organs is often interrupted. There results from this, as I have also above indicated, entire forms of brains and crania extremely varied.

This circumstance causes, even in some species of animals, an apparent difference in the situation of the nerves of the senses. In man the numerous small inferior convolutions of the brain extend beyond the bulb of the olfactory nerve. (Pl. ix.) In many animals, on the contrary, such as fishes, the amphibia, birds, the ox, (Pl. iii.) the sheep, (Pl. iv.) the mole, &c., the bulb of the olfactory nerve is found in front of the anterior inferior convolutions; either because these animals do not have these convolutions at all, or they are very short in them.

But since, on account of the organs that are wanting in these animals, sometimes in one region, sometimes in another, the place of the organs varies in a particular point, how can the naturalist be assured that, for instance, the protuberance at the external border of the forehead is, in such an animal, the organ of the sense of localities, in another that of the sense of sounds, and, finally, in man, that of the sense of numbers? How is it possible, in these cases, to establish the analogy which exists between man and animals, and to find in these last a confirmation of the organs discovered in man.

This is, certainly, a great difficulty for a beginner, but nothing for a practised observer; for, first there

is an opportunity of making a number of comparisons between different species of animals, and between different individuals of the same species. In the second place, the forms of the organs already ascertained afford us great resources. These forms always remain the same as far as the essential part is concerned, and the expert observer will hardly ever be liable to confound them. If we compare a man, in whom the organ of the sense of localities is strongly developed, with a dog who has also this organ strongly marked, and with a lemming, we shall find in each the same form of organ. If we are still in doubt, we have only to make the comparison with other species of mice, and with dogs, that have the organ of localities feebly developed. This method is applicable to all the organs, so far as it is required to find in animals, confirmations of the organs discovered in man.

Finally : the comparison of the human brain with that of animals, enables us to know, of what integral parts or of what individual organs, the brain of man is composed ; where the animal ceases in man ; where the noble character commences, which distinguishes him from the brute, and how much he is elevated above brutality ; a study much more useful and more positive than the vain reveries of the metaphysicians.

Eighth Method ; Accidental Mutilations.

It is true, that I have rejected violent mutilations, as a means of discovering the functions of a cerebral part, or of any organ whatever. The reasons that I have alleged still exist in those cases where an accidental mutilation has disturbed the functions of any faculty or quality whatever. Still, when, after the seat of an organ has been discovered by other means, and this discovery has been sufficiently proved, and this organ having been injured, there ensues any lesion of the faculty that is attributed to it, we may with the fullest assurance, regard this phenomenon as

a new proof. When, for example, the organ, by means of which we possess the faculty of retaining names, has been injured by a bullet, and there follows from this an inability to recollect names; or when the region, where the organ of numbers is situated, becomes painful every time that one makes difficult calculations; when, after a lesion of the organ, already well proved, of the instinct of propagation, there ensues impotence and a disgust for cohabitation, no one will suppose, that it is bad reasoning, to regard these facts as so many new confirmations.

Ninth Method, taken from the Succession and the Arrangement of the Organs.

The physiology of the brain, advanced as it is at present, is an undeniable proof, that the employment of the means above indicated, has been infinitely more useful to science, than all the efforts of the metaphysicians and anatomists, who have not been governed by the spirit of sound philosophy. Now that we know a sufficiently large number of the primitive radical powers and organs, it becomes more and more possible to ascertain the laws according to which nature has disposed them in the brain. These laws have afforded me a new and extremely philosophical means of assuming, in the first place, and then of discovering the seat of the fundamental powers.

Let me explain.

Up to the present time, I have never permitted myself to be influenced by reasoning *a priori*, having early learned how perfidious it is, and of how many plausible errors it is the source. I preferred to abandon myself entirely to observations. The consequence was, that I sometimes discovered one fundamental quality or faculty, sometimes another, sometimes one organ, sometimes another. Whenever I believed that I had determined a primitive or fundamental power,

in whatever degree of activity, and I thought that I had found the seat of its organ, I marked the place of this organ, and designated its form on the cranium. In this way of proceeding, I could follow no other order than that in which I made my observations. I defined, sometimes in one region, sometimes in another, the form of the organ that I had just discovered. Occasionally I had the good fortune to seize at once, both the place and the form of an organ precisely. But sometimes, too, there has been so much vagueness in my first outlines, that I have been obliged to make a greater number of observations, better compared, in order to determine the seat or the form of an organ with more precision. From this has arisen the craniological chart, seized by the public with so much avidity; and since it was the only thing to the purpose which has appeared, it was thought that the whole tendency, and all the merit of the physiology of the brain, were contained in this chart. Artists soon took possession of it, have executed it either well or ill, without ever consulting me, and have published a great number in all sorts of forms. This has determined us to make them more exact either on crania, or on plaster casts.

After I had a thousand times considered this arrangement of organs, I was struck with the following great truths. If the reader has in his hands a head similarly marked, I entreat him to place it before his eyes, and to follow me in my reflections.

1. The qualities and the faculties, which are common to man, and the other animals, have their seat in those cerebral parts, which are equally common to man and brutes. Whenever, then, we are speaking of a quality or faculty common to beasts and man, we should seek its organ in the inferior posterior, the posterior inferior, or the anterior inferior parts of the brain. Of this number for example, are, the instinct of propagation, the love of offspring, the instinct of self-defence, that of providing food, the instinct of cunning, &c.

2. The qualities or faculties which man exclusively enjoys, and which form the barrier by which he is separated from the brute, have their seat in those cerebral parts which are wanting in animals, and we must consequently seek them in the anterior superior, and the superior anterior parts of the forehead. Of this number for example, are comparative sagacity, the metaphysical disposition or causality, wit, the talent for poetry, the disposition to religious sentiments and ideas.

3. The more indispensable the qualities and faculties may be, the more do we find their organs placed near the base of the brain, or towards the median line. The first and the most indispensable of all the organs, that of the instinct of propagation, is placed nearest the base; then comes that of the love of offspring, &c. The organ of the sense of localities is more indispensable than that of the sense of tones, or that of numbers; and hence the two last are placed farther from the median line than the first. Then, the more a quality or a faculty is essential, the more it is necessary to seek its organ near the base of the brain, or the median line. The organs, that are less indispensable, are placed towards the top and sides of the head. If I wished to discover the organ of the talent for poetry, I should not, according to this principle, look for it either at the base, or near the median line of the brain.

4. That the organs of the fundamental qualities and faculties, which mutually aid each other, are also placed near each other; for instance, the organ of propagation and that of the love of offspring, that of self-defence and the carnivorous instinct, that of tones and of numbers. If there exist organs for the senses of order and of the measure of time, it is very probable that they will be found in the neighbourhood of that of the sense of locality, of tones, and of that of the sense of numbers.

5. The organs of the fundamental analogous qualities and faculties are also placed near each other.

For example, the organs of the relations of places, colors, tones, and numbers are placed in the same line, the same as the organs of the superior faculties, and those of the propensities of the inferior animals.

Every one must be struck with the profound wisdom, which is manifested in the arrangement and successive order of the organs. This connexion has appeared to me to be one of the most important proofs of the truth of my discoveries. I challenge all those, who would wish to attribute my determination of the radical powers and the seat of their organs, to caprice, to a destination arbitrarily conceived, to be endowed with the tenth part of the perspicacity necessary to have only the most obscure presentiment of this order which is so admirably combined! But once found, we discover there the hand of God, which we cannot cease to adore with the more astonishment, in proportion as his works are more displayed before our eyes. We easily conceive how these laws, which preside over the arrangement of organs, ought to facilitate new discoveries in the organical part of the physiology of the brain.

After the exposition of the fundamental powers and their organs, I shall treat of gestures, mimicry, and the forms of heads peculiar to different nations. We shall see that the language of gestures, and the form of the head in different nations, compared with the national character, are equally a means not only of confirming the discoveries already made, but also of making new ones.

Before treating of the fundamental qualities and faculties in particular, and of indicating the seat of their organs, it will be useful to tell the reader what I understand by the expressions, *qualities and faculties, fundamental, primitive, radical*; and to give some general notions of the brain and cranium, and on the manner in which we should undertake the investigation of the seat and the form of the organs.

Definition of the idea, Fundamental, Primitive, Radical Qualities, Faculties.

Although I cannot present in all its development my philosophy of the moral and intellectual qualities, instincts, propensities, and sentiments, until after the exposition of all the radical powers at present known, I believe that I have said enough, to enable the reader to recollect the difference, which exists between the general attributes of philosophers, between perception, attention, memory, comparison, judgment, imagination, &c., and the instincts, propensities, sentiments, and the determinate talents. Each of these last belongs to a particular organ, whilst the others are only attributes, modes of activity of the true fundamental powers. The attributes are inseparable from all radical faculties or qualities, whilst these exist by themselves, and constitute a proper, specific function.

It would be well, if we could determine all the fundamental powers, as, for example, the propensity to propagation, the love of offspring. But the ordinary action of the qualities and faculties hardly excites attention; it escapes from us in its primitive destination; we see the different ramifications of the tree, but its root is concealed. So also we are often struck by the modifications, by the different degrees of manifestation of the radical powers; but we have not penetrated to their source, their root. We see the poet, and the external mark of his talent; but this degree of activity is evidently the result of an extraordinary development of one cerebral part. What is the function of this part in its primitive destination? What is its radical fundamental function? The propensity to robbery, to murder, to benevolence, to devotion, are each equally the result of the development and extraordinary action of an organ. But to what radical, primitive, fundamental function should we refer them? Here are great difficulties to overcome. For many

organs we have already succeeded in determining a primitive, radical action ; with regard to others, I shall enter upon the discussion of them with my readers, as often as an opportunity offers.

In the mean time, we believe that we can indicate, in the following manner, the characteristic conditions which entitle an instinct, a propensity, a sentiment, a talent, to the appellation of fundamental, primitive, radical.

1. When a quality or faculty, or rather its organ, neither manifests itself, nor is developed, nor decreases, at the same period as others. It is thus that the organ of the propensity for propagation, and the propensity itself, are developed, and usually manifested later than the other propensities. It is thus that the memory of names, is generally impaired sooner than the other faculties.

2. When, in the same individual, a single quality or faculty is more or less active, and its corresponding cerebral part is more or less developed than the other parts. It is thus that the great sculptors, painters, designers, sometimes have not the least disposition for music ; and the greatest poets, little talent for mathematics.

3. When a single quality or a single faculty is active, whilst the others are paralyzed, and only the single organ developed, which corresponds to it. It is thus that those who are idiots, in all other respects, are sometimes imperiously affected by physical love, or have a great talent for imitation, &c.

4. When all the other qualities and faculties exist in full force, and all the other organs being sufficiently developed, one single faculty or single quality remains inactive, and one single organ undeveloped. It is thus that certain individuals cannot comprehend that twice two makes four ; that others hold music and women in abhorrence.

5. When in mental diseases there is only a single quality or a single faculty that suffers, or there is only

one which remains in its perfect integrity. It is thus that one person is insane in relation to religious ideas, to his pride only, &c. ; that another, although mad in all respects, yet gives lessons in music with great correctness.

6. When the same quality or faculty is manifested in a manner totally different in the two sexes of the same species of animals, and the organ in the different sexes is differently developed. It is thus that the love of offspring and its organ are more strongly marked in the females of most animals ; it is thus also with singing birds, that the male alone sings, and has this organ well developed.

7. When, finally, the same quality or faculty and the same organ are always found in a particular species, and always are wanting in another species. It is thus that many species of birds, that the dog, the horse, &c., have neither the propensity nor the organ of construction, which are so wonderfully manifested in other species of birds, in the squirrel, in the beaver. It is thus that certain species of animals are carnivorous, emigrate, sing, take care of their young, &c., whilst other species are herbivorous, pass a sedentary life, do not sing, and abandon their offspring.

In all these instances we may admit the quality or the faculty in question to be a fundamental quality or faculty, a primitive, radical power. It is by no means necessary that all these conditions should be united ; but the more there are of them, the better the independence, the speciality of the quality, or of the faculty, and the existence of the organ will be proved.

Description of the Brain, of the Head, and the Cranium, so far as the Knowledge of it is necessary for the perfect Understanding of the Seat of the Organs.

Those who possess my large work, with the atlas, will have a much greater facility in understanding the

following descriptions and the indications of the seat of the organs, than those who are deprived of these means. But even those who consult the plates, must not flatter themselves with having an exact idea of the brain and the cranium, without having seen them. Whatever degree of exactness I place in the determination of the seat of the organs, I know by experience, that no one can well instruct himself in this part, without having a cranium, or, what is much better, a marked or purposely designed head, before him.

PLATE IV. represents the inferior surface of the brain, such as it is applied to the base of the cranium. PLATE IX. represents the superior surface of the brain placed in the cranium in its natural situation. PLATE VIII. shows the brain seen in profile, also in its natural situation in the cranium. PLATE XI. represents a vertical section made between the two hemispheres, so that we see the internal surface of the left hemisphere where it touches the right. We make a perpendicular section in commencing with PLATE IV. from 28, 91, *c, a*, 22, 25, to PLATE IX. 69, 48.

In all the brains, the organs (or rather the expansion of the organs after they have arrived at the surface of the brain) are marked with Roman figures.

PLATES X. and XII. 38, 38, 38, is the radiated appearance of the medullary fibres, S. S. S., which depart from the commissures (*renfort*) f. p. p. p., to go towards the formation of the nervous membrane of the brain, which forms the folds which we call convolutions.

Now the reader can form to himself a correct idea of the position of the brain in the cranium, of the cranium itself, and of the manner in which the organs appear on its surface. We see distinctly, (Pl. VIII.) that the whole cranium is filled by the cerebral mass; that between the internal surface of the cranium and the brain there are only some membranes to be found, that is to say, the vascular membrane, (*pia-mater*,) the arachnoid membrane, very thin, and a membrane of more consistence, called the *dura-mater*.

The Bones which form the Osseous Box of the Brain.

Sphenoid Bone.

The inferior part of this bone is not a subject of consideration here. It is true, that it is in contact with a small portion of the middle lobes, but we can only discover its form after death. A small portion of this bone is placed against the posterior external part of the orbits, and contributes a little to determine their form. A portion of its alæ touches the posterior border of the frontal bone, as well as the anterior border of the temporal, and the anterior inferior angle of the parietal.

Temporal Bones.

The temporal bones (Pl. xxviii. vi.) extend from the posterior border of the alæ of the sphenoid bones, to the inferior border of the parietal bones, and even as far as a portion of the anterior and lateral border of the occipital bone. The temporal bones contain the auditory apparatus. Behind the auditory opening is found the mastoid process; which is filled with cells.

Occipital Bone.

The occipital commences behind the sphenoid at the base of the brain; it forms the occipital hole, which gives passage to the spinal marrow, and extends downwards and backwards, then ascending, where it joins the posterior edges of the parietal bones. (Pl. xxviii. i. ii.)

Parietal Bones.

These bones (Pl. xxviii. ix. xiii.) unite in the superior part of the median line; in descending they

extend laterally to the temporal bones, backwards to the occipital, and forwards to the frontal.

Frontal Bone.

The frontal bone, in ascending, extends from the root of the nose and the superior part of the orbits, to the superior anterior border of the parietal bones, (Pl. XXVIII. *a*, 56, 55, 54, 53, XXVII.) and laterally to the sphenoid bone.*

In books of anatomy, it is true, they describe these bones as having always the same form; but the fact is, that their form differs in different individuals, according as the cerebral parts situated against them have different proportions among themselves. It is precisely this which causes the various forms of heads; varieties of forms, which indicate the different modifications of the moral and intellectual character of individuals.

The crania of animals, as I have before said, require a particular study, not only as it respects the diversity of the species, but also according to the age of the individuals. In some species, we can determine the form of the brain, from an examination of the external surface of the cranium, very nearly in the same manner as in man; in others, on the contrary, the external table of the cranium, either in its whole contour, or in some regions, is so far from being parallel with the internal table, that the external form of the head and cranium, in no way resembles the form of the brain. Hence in these animals, the organologist can arrive at no conclusions, but from the internal surface of the cranium, or the external form of the brain.

* I make no mention of the ethmoid bone, because, being covered entirely by the bulb of the olfactory nerve, it is not in contact with the brain.

Method of examining the Organs.

It is first necessary to be familiar with the middle, ordinary, or moderate degree of development of the organs. The attentive inspection of a great number of heads, and the study of their ordinary forms, for a long time continued, will gradually procure this knowledge. We can then profit by all occasions for acquiring an exact idea of the extraordinary development of the different cerebral parts, and their prominences on the external surface of the head. We should examine the heads of great poets, mathematicians, mechanics, musicians, travellers, &c. In adhering to these two indispensable precautions, we shall soon remark that the most characteristic organs form neither the bumps of the buffoon anti-organologists, nor salient prominences like an egg or the fist.

The anterior parts of the forehead, bald heads, and crania do not require to be felt; an experienced eye is sufficient to judge of the degree of development of the brain in general, and of certain regions and certain parts in particular. We shall do well by studying, first, the different sizes of heads in general; then, we should endeavour to ascertain the different developments of the frontal region, the occipital, the lateral, the top of the head, and we should end by studying the subdivisions of all these regions.

When it is required to touch or feel, it is necessary to resort to an expedient, which I have always experienced a difficulty in making my auditors comprehend.

Supposing that the examination of organs requires a very nice touch, they seek them with the ends of the fingers, the fingers being at the same time separated. In this manner we may perceive certain asperities, fissures, little grooves, exostoses, tumors, &c., upon the head; but, in this way, we shall never discover prominences that are slight, large, round, oval, &c., that the

different developments of the cerebral parts produce on the surface of the heads or crania. It is, on the contrary, necessary to join the fingers, and pass and repass their inner surface over the spot or place where we seek the external sign of an organ. We thus augment the points of contact, and in thus gently passing the hand over the head, we easily discover prominences, that even escape the eye.

Most of my auditors, being instructed in this method, detect the organs at the first touch, or the first *coup-d'œil*. But there are some eyes and some hands, so unfortunately served by the brain, that it is impossible for them to be convinced of the reality of the most distinct forms. *Non omnia possumus omnes.*

SECTION III.

EXPOSITION OF THE FUNDAMENTAL POWERS, OR THE PRIMITIVE, RADICAL MORAL QUALITIES AND INTELLECTUAL FACULTIES ; THE INSTINCTS, PROPENSITIES, SENTIMENTS, TALENTS, AND OF THE PARTICULAR SEAT OF THEIR ORGANS.

THOSE who call to mind the historical account of my discoveries, will not expect that I should treat of instincts, propensities, sentiments, and faculties in the same order in which I discovered them.

I will try to conform, as much as possible, to the order, that exists in the organization of the human brain. I shall commence with the inferior propensities or faculties ; then I shall pass to the qualities and faculties which gradually assume a superior order, and I shall conclude by the most elevated sentiment, — that of rendering homage to the Divinity. This course will conduct us to the only true philosophy, to the detailed knowledge of man, and it will furnish us with luminous solutions of questions of the highest interest.

Instinct of Generation, of Reproduction ; Instinct of Propagation, &c.

I commence with that function of the living organization, on which depends the existence and the continuance of the different species of animals. The first and the most universal of all the commands was — *Increase and multiply!* Why then should we use evasions when the most indispensable of all the instincts is concerned, the instinct which governs all the rest, and by the aid of which *l'une des moitiés du règne animal se*

*confond avec l'autre dans les délices d'une inexprimable jouissance.**

Considérons ce penchant avec toute l'attention que mérite sa haute destination ; suivons-le, tant dans ses actes réguliers, que dans ses égaremens. Quoique ce sujet, objet des méditations de tant de naturalistes, ait été traité mille fois, il fournit encore des résultats aussi neufs qu'importans pour le physiologiste, pour le médecin, pour l'instituteur et pour le moraliste.

En traitant l'histoire naturelle du penchant à la propagation, ou de l'instinct de la reproduction, je prouverai qu'il n'a ni son origine, ni son siège dans les parties sexuelles. Je démontrerai que ces parties sont subordonnées à une puissance supérieure, au cerveau, et que par conséquent, c'est dans le cerveau qu'il faut chercher tout ce qui a rapport à cet instinct, tant dans l'état de santé que dans l'état de maladie ; que c'est le cerveau qui explique tous les phénomènes qui la concernent ; que c'est le cerveau qui règle tout ce qui y a rapport ; que c'est en agissant sur le cerveau qu'il faut modifier les diverses manifestations de cet instinct.

L'instinct de la Reproduction est une Fonction du Cerveau, et n'appartient nullement aux Parties Sexuelles.

Souvent déjà nous avons vu que les naturalistes attribuaient aux instrumens exécuteurs ce qui est dû aux organes législateurs. On attribuait la cabane du castor à sa queue, l'intelligence de l'éléphant à sa trompe, la peinture, la sculpture, et toutes les facultés intellectuelles de l'homme à ses cinq sens, particulièrement à ses mains.

* For various reasons the remainder of this Section is retained in the original. For the application of the principles of Dr. Gall, contained in this Section, the reader is referred to the "*Edinburgh Phrenological Journal*," and to Spurzheim's first volume, on the organ of Amativeness.

Par une raison plus forte, l'on imputait à l'influence des parties de la génération sur le cerveau, ou même à ces parties seules, ce qu'on aurait dû imputer au cerveau et à son influence sur les parties sexuelles. Puisque l'on cherchait le siège des instincts et des penchans dans les ganglions et dans les plexus du bas-ventre et de la poitrine, qui n'aurait pas placé l'instinct de la génération dans les instrumens que l'on voyait seuls jouer un rôle dans cette fonction ?

Il y avait cependant un moyen d'être averti de son erreur. L'on voyait de temps en temps des enfans de deux, trois, quatre, cinq ans, où les parties sexuelles n'étaient encore nullement développées, où il n'y avait encore aucune sécrétion d'une liqueur irritante, être portés impérieusement vers l'autre sexe et s'adonner aveuglement à l'exercice de la volupté. L'on voyait des vieillards des deux sexes, chez qui la source du prétendu excitant était tarie, être tourmentés par des désirs que le flasque rétrécissement de leurs parties sexuelles ne permettait plus de satisfaire. L'on avait vu des castrats et des eunuques rechercher encore avec ardeur les jouissances vénériennes. Les physiologistes avaient même consigné des faits qui démontraient que des femmes privées de la matrice par vice de conformation primitive, n'avaient pas moins ressenti l'aiguillon de la chair.

L'on s'est, de tout temps, beaucoup occupé des changemens que l'époque de la puberté opère dans l'existence totale du jeune homme et de la jeune fille. Voyant le développement et l'activité naissante des parties sexuelles, l'on se faisait illusion, et l'on croyait que les facultés morales et intellectuelles qui commencent à se manifester avec plus d'énergie dans ce même moment, étaient subordonnées aux organes de la génération. Mais on avait tout-à-fait perdu de vue le cerveau, dont diverses parties acquièrent à la même époque un surcroît de développement et d'énergie. C'est la seule raison pourquoi le garçon et la fille cessent d'être enfans ; pourquoi les forces morales et intellectuelles se manifestent avec plus de vigueur ;

pourquoi cette activité se peint dans l'éclat de leurs yeux et dans l'expression de tous leurs traits, etc. etc.

C'est encore la raison pourquoi l'adolescent et la fille nubile conservent chacun leur caractère propre d'homme ou de femme, nonobstant le même changement opéré dans les parties sexuelles à l'époque de la puberté.

C'est encore la raison pourquoi certains cretins et certains idiots ne sont pas moins imbécilles, quoique leurs parties sexuelles soient parfaitement développées et que l'exercice de leurs fonctions soit très énergique.

C'est encore la raison pourquoi quelquefois des enfans, à l'âge de trois, cinq ans, ayant les parties sexuelles parfaitement développées et étant impérieusement portés à l'acte vénérien, restent pourtant enfans sous tous les autres rapports.

Tous ces phénomènes haussent-ils pas dû désabuser les physiologistes, et leur faire chercher les changemens moraux et intellectuels observés à cette époque, ailleurs que dans l'action des parties sexuelles ?

Je vais rapporter quelques passages de l'ouvrage de M. Georget, où il parle des sympathies des organes cérébraux, T. II., p. 159 et suiv. On jugera facilement qui a le premier fait naître ces idées.

“Avant d'entrer dans le détail des faits, dit-il, remarquons que s'il s'agit d'un penchant, d'un désir, d'une passion, c'est dans le cerveau que nous aurons à en chercher le siège immédiat ; car cet organe seul est l'instrument des facultés intellectuelles et affectives, du moins chez l'homme et les grands animaux ; l'amour, le désir de l'union des sexes est donc dans le cerveau. Seulement il peut exister ailleurs un excitant, un besoin qui éveille, par influence sympathique, ce désir, ce penchant. Et tantôt alors le désir naîtra le premier, uniquement par la force cérébrale, et provoquera le besoin ; tantôt, au contraire, celui-ci sera le moteur de celui-là. Ce sont précisément là les rapports des organes génitaux et du cerveau.

*“I. Action du cerveau sur les organes génitaux ;
désirs vénériens naissant directement de l'action
cérébrale.*

“Je ne crains pas d'avancer un paradoxe en soutenant que les causes les plus nombreuses et les plus puissantes des désirs vénériens ont leur source dans l'action même du cerveau. Les propositions suivantes en sont des preuves incontestables.

“1. Le désir vénérien est un phénomène cérébral.

“2. Les fonctions génitales sont en très grande partie sous l'empire de la volonté ; je ne crois pas que le penchant à l'union des sexes soit jamais tellement irrésistible, que l'individu ne puisse y résister, du moins momentanément. D'ailleurs il suit la loi commune aux autres penchans, qui acquièrent d'autant plus de pouvoir et d'influence sur la raison qu'ils sont plus énergiques.

“3. Les désirs vénériens, et l'action de l'appareil organique destinée à les satisfaire, présentent dans leur développement, leur marche, leur terminaison, des phénomènes analogues à ceux que présentent les autres penchans, les fonctions qui sont sous la direction immédiate du cerveau. Ainsi, ces désirs et cette action tout-à-fait nuls à la naissance et pendant les premiers temps de l'existence, commencent à se manifester plus ou moins vite, plus ou moins fortement dans les années qui précèdent la puberté ; de cette époque, qui arrive en général de douze à seize ans, quelquefois plus tôt, quelquefois plus tard, selon les dispositions particulières, les sexes, les climats, jusqu'à quarante-cinq ou cinquante ans, ils sont dans leur plus grande énergie ; ils vont ensuite en décroissant, et finissent par s'affaiblir et s'éteindre à mesure que le cerveau perd de sa force, et en même temps que les autres passions.

“4. Les causes les plus fréquentes qui éveillent les désirs vénériens, qui excitent les organes génitaux, les situations de la vie plus propres à produire cet

effet, sont les idées, les conversations, les lectures lascives, des affections gaies, les réunions de sexes différens, telles que spectacles, sociétés, bals, etc. ; la vue de personnes du sexe opposé ; des rapports plus ou moins directs, des attouchemens, etc. Il est bien certain que l'excitation génitale, dans la grande majorité des cas, est précédée de l'idée, de la pensée de la jouissance désirée ; c'est alors que l'on sent ce trouble de l'intelligence, ce feu brûlant qui semble couler dans les veines et se porter au lieu du sacrifice, que l'on est pris de ce frissonnement qui annonce une forte détermination partie du centre sensitif. Et, au contraire, les causes qui font oublier, rester dans l'inaction le besoin de la reproduction, sont la solitude, ou plutôt une société peu nombreuse, l'éloignement des sexes, l'absence des circonstances qui retracent des tableaux voluptueux, tels que romans, livres où sont des peintures vives et animées de l'amour, l'occupation continuelle de l'esprit à des travaux qui fixent l'attention, les fatigues musculaires, les affections morales tristes, l'ennui, le dégoût, la possession du même objet, etc.

“5. Pendant le sommeil, le cerveau a un tel empire sur les organes génitaux, qu'il suffit de rêves voluptueux pour exciter l'éjaculation. Et si l'excitation directe des organes génitaux, dit Cabanis, est souvent la véritable source des tableaux voluptueux qui se forment dans le cerveau pendant le sommeil, c'est aussi très souvent de ces tableaux seuls que l'excitation de ces mêmes organes dépend.* Pendant le sommeil l'imagination a une puissance plus étendue sur certains organes ; par exemple, sur ceux de la génération, parce que dans cet état le cerveau ne recevant plus d'impressions externes, les impressions internes sont plus vives ou plus dominantes.†

“6. La pensée, l'imagination influent bien manifestement sur la puissance vénérienne, sur la prompti-

* *Rapports* etc., tome I, page 540.

† *Id.* T. II, page 184.

tude et la vivacité des jouissances vénériennes ; ces jouissances sont plus ou moins vives, promptes, faciles, possibles même, selon les dispositions d'exaltation ou d'indifférence, de désir ou de dégoût, etc. Les exemples se présenteraient en foule pour appuyer cette proposition.

“ 7. L'excitation cérébrale légère que produisent les liqueurs alcooliques, le café, réveille le penchant amoureux ; l'ivresse l'éteint. Entre ces deux états il en existe souvent un autre fort remarquable, ce sont des désirs violens, mais sans véritable besoin, une excitation purement cérébrale avec le calme, l'inaction la plus absolue des organes génitaux.

“ 8. On connaît les effets des prétendus charmes, sorts, etc., jettés sur de nouveaux conjoints dans les temps d'ignorance et de superstition ; on connaît les succès des noueurs et dénoueurs d'aiguillettes, etc.

“ 9. Les praticiens ont observé des phénomènes génitaux dans des affections cérébrales. Ainsi l'érection chez l'homme a été observée par Bichat, à la suite de commotions cérébrales ; elle n'est pas rare dans l'ataxie ; M. Serres l'a vue dans deux cas d'*affection du cervelet*, dont l'un était un épanchement de sang, et l'autre une inflammation. On sait que les pendus présentent fréquemment ce phénomène, et que des individus ont été assez dépravés pour chercher à se procurer des jouissances par un moyen aussi odieux.

“ 10. La saignée, l'affaiblissement des penchans et des passions par les macérations, les jeûnes, le régime végétal, l'usage de l'eau seule pour boisson, diminuent et finissent par faire oublier *les désirs charnels*, surtout chez les personnes qui n'en sont pas naturellement très tourmentées.

“ 11. M. Gall place le siège de l'amour physique dans le cervelet. C'est peut-être le point de la doctrine sur la pluralité des organes cérébraux et leurs fonctions particulières, en faveur duquel M. Gall a réuni le plus de preuves. L'observation de M. Serres est ici de quelque poids. M. Larrey en cite une d'un

militaire qui, après avoir reçu un coup de sabre sur la nuque, ne ressentit plus jamais aucun désir vénérien. Hippocrate assure que les Scythes se rendaient impuissans en se coupant les veines qui sont derrière les oreilles ; cette tradition, qui n'est sans doute point vraie quant au fait qu'elle nous transmet, indique pourtant qu'on avait saisi quelques rapports entre la nuque et les organes génitaux. Ferrand (de la Maladie d'amour ou Mélancolie érotique) assure que des médecins ont retiré des avantages de l'application de sangsues à la nuque ou derrière les oreilles, chez les malades atteints de cette affection. Enfin j'ai vu à la Salpêtrière une de ces femmes à *tempérament ardent*, dont toute la déraison consistait en des désirs vénériens des plus impérieux ; avant d'entrer dans l'hospice elle avait plusieurs fois supporté, provoqué les approches de dix, douze ou quinze hommes dans un jour. Pendant son séjour, elle était très souvent prise d'une forte douleur à la nuque, en même temps qu'elle ressentait ce vif penchant à l'union des sexes, qu'elle satisfaisait par la masturbation, à laquelle elle se livrait jusqu'à dix ou douze fois par jour ; ce qui la soulageait beaucoup, ne lui causait aucun accident, et faisait disparaître immédiatement la douleur de la nuque.

“ 12. Un fait très important, et bien propre à éclairer la question qui nous occupe, est celui-ci : il est d'observation que la diminution et l'extinction de la possibilité du coït, chez l'homme (chez la femme on ne peut s'assurer de cette remarque), précède constamment la diminution et l'extinction des désirs vénériens ; c'est ce que l'on voit arriver naturellement chez les vieillards, et accidentellement chez les libertins, dont les organes génitaux ne sont plus excitables à force d'avoir été excités. Les vieillards qui n'ont pas la prétention de donner pour un acte de sagesse ce qui n'est réellement que l'effet de l'impuissance, conviennent sans peine de cette vérité ; et il n'est personne qui n'ait été à même d'observer la situation triste et misérable de ces malheureux dont les organes gén-

taux, flétris et comme inertes, ne peuvent plus répondre en aucune manière à l'action cérébrale manifestant des désirs vénériens d'autant plus pressans, qu'il est moins possible de les satisfaire.

II. *Action des organes génitaux sur le cerveau ; désirs vénériens excités par l'action de ces organes.*

“ 1. L'état d'érection excite ordinairement les désirs vénériens, soit par la sensation agréable ou de gêne qui l'accompagne, soit en rappelant à l'esprit l'image de la jouissance dont cet état est une condition. Tantôt, comme nous venons de le voir, elle naît de l'influence cérébrale, mais d'autres fois ce sont des circonstances purement locales qui la provoquent, telles que des attouchemens, le frottement de la muqueuse du gland ou du vagin. Toutefois il est bien digne de remarque que l'acte vénérien ainsi excité, est beaucoup moins ardemment désiré que lorsque le cerveau en est le premier provocateur, à moins que le besoin n'ait le pouvoir de réveiller le désir dans toute son énergie.

“ 2. La plupart des maladies génitales n'ont aucune action sur le cerveau, comme excitans vénériens. Lors même qu'elles causent l'érection, comme on le voit dans certains phlegmasies de l'urètre, dans l'irritation du col de la vessie par l'usage de cantharides, cet état est plutôt douloureux, pénible, que propre à porter aux plaisirs de l'amour.

“ 3. L'action de la chaleur sur les organes génitaux favorise l'érection ; le froid produit un effet contraire.

“ 4. Les physiologistes qui ne veulent tenir aucun compte de l'influence cérébrale sur les organes génitaux, et rapportent tout à ces organes, s'appuient beaucoup des résultats de la castration. Il est en effet certain que les personnes auxquelles on a enlevé les testicules de bonne heure, présentent des phénomènes fort remarquables. Il n'est pourtant pas absolu-

ment vrai que ces personnes soient entièrement sans désirs vénériens : on a de nombreux exemples du contraire. Les eunuques ou castrats ne présentent point les caractères de la virilité ; ils conservent la complexion féminine. Comme les femmes, ils ont la voix enfantine, leur système pileux ne se développe point à la figure ni au thorax. Le cerveau reste chez eux sans énergie morale et intellectuelle, et comme les êtres faibles, les eunuques sont faux, dissimulés, trompeurs, vindicatifs. Narsès est peut-être la seule exception qu'ait offerte cette classe malheureuse ; par ses exploits et son courage, par son caractère, il se montra l'égal d'un grand capitaine. Les eunuques, ainsi que les animaux châtrés, engraisent promptement. Ces derniers, comme les premiers, n'ont point ou perdent les signes propres à leur sexe. Bien plus, quelques animaux, mais les mâles seulement, éprouvent des changemens très marqués lors de la saison des amours ; ainsi le bois du cerf croit d'une branche, certains oiseaux sont parés d'une hupe, et leur voix retrouve la faculté de chanter.

“ Un fait ne peut anéantir un autre fait, et, bien que les testicules influent, n'importe comment, sur le cerveau, il n'est pas moins certain que cet organe est le siège du désir vénérien, et devient le plus souvent la cause excitante qui provoque le besoin de l'union des sexes. Tout de même, les muscles et l'intégrité du cordon rachidien sont essentiels à l'exercice des mouvemens volontaires, quoique le principe de ces mouvemens, leur point de départ réside dans le centre des volitions. Je n'entrerai ici dans aucune explication, parce que j'avoue que mes réflexions sur cet objet ne m'ont conduit à rien de satisfaisant touchant la nature des rapports des testicules et du cerveau.

“ L'on a voulu trouver aussi chez la femme une partie de l'appareil génital qui correspondît au testicule, pour le siège du besoin de l'union des sexes, et la plupart des auteurs se sont déclarés en faveur de l'utérus. En sorte qu'ils placent dans cet organe

toutes les maladies érotiques ou prétendues érotiques ; de-là les noms de *fureur utérine*, d'*hystérie*, de *suffocation de matrice*, par lesquels ils les désignent. Mais ici, non-seulement aucun fait ne rend la chose probable, il en existe qui prouvent évidemment le contraire : ainsi, l'on a observé des femmes privées d'utérus et extrêmement portées aux plaisirs de l'amour. Le clitoris a été regardé par quelques uns comme étant chargé de cette fonction ; Moschio, Albucasis, Ferrand, en conseillent l'excision dans certaines affections libidineuses. M. le professeur Dubois prétend avoir retiré du succès de cette opération chez une jeune nymphomane. Cependant personne ne suit la pratique de ces observateurs, probablement parce qu'on n'en espère rien de bien avantageux.

Il suit de ce qui vient d'être dit, que toute exaltation morbide des désirs vénériens est une véritable monomanie, dont le siège ne peut être que dans le cerveau, et dont la cause, comme celle des désirs vénériens, doit le plus souvent être cérébrale. Je suis bien convaincu que, dans cette circonstance, les organes génitaux ne sont que secondairement excités, qu'ils ne sont que les complices du cerveau. Remarquez en effet, 1. que cette maladie a lieu précisément à l'aide des circonstances que nous avons considérées comme des excitans cérébraux : ainsi c'est dans les grandes villes, dans le grand monde, dans les classes qui fréquentent les spectacles, les bals, les sociétés, qui lisent des romans, qui n'ont aucune occupation qui les distraie ou les fatigue, qu'on rencontre des nymphomanes ; on sait à peine ce que c'est dans les campagnes, les petites villes, où, pourtant, le besoin de l'union des sexes est aussi bien senti que dans ces conditions. 2. Que la masturbation qui éteint, satisfait le besoin, n'est ici presque toujours d'aucun secours, parce que ce sont des désirs particuliers, comme de posséder tel ou tel objet. 3. Les hommes dont l'imagination n'est en général que très peu occupée de ces sortes d'idées ne sont point non

plus sujets à cette affection, quoique, selon moi, ils aient des besoins plus pressans, plus forts que les femmes. Nous reviendrons d'ailleurs sur ce sujet dans la partie de cet ouvrage réservée à la pathologie. Les auteurs confondent avec cette maladie une autre affection qu'ils placent également dans les organes génitaux, dans l'utérus, quoiqu'elle n'ait le plus ordinairement aucun rapport avec elle, et que, seulement, elle la reconnaisse quelquefois pour cause, je veux parler de la prétendue hystérie. Un fait bien remarquable aurait pourtant dû frapper les médecins, et les éclairer sur le siège de ces maladies : c'est que les affections des organes génitaux, de l'utérus ou du vagin, du pénis, du testicule ou des ovaires, aiguës ou chroniques, telles que cancers, siphilis, blennorrhagie, hydrocèle, sarco-cèle, hydropisie des ovaires, tumeurs utérines de toutes sortes, restent plus locales que toutes autres, ne se manifestent souvent que par des incommodités locales, ou même ne se rencontrent qu'après la mort, ayant été ignorées pendant la vie.

“ M. Esquirol a connu une dame âgée de cinquante ans, dont les règles avaient cessé de paraître depuis un an, chez laquelle l'écoulement reparut et dura plusieurs années, par l'effet d'une passion amoureuse vive qui vint troubler son repos.”

Déjà dans le premier volume, p. 387, M. Georget avait démontré que la volupté vénérienne est une sensation, une perception cérébrale ; que tous les phénomènes qui y ont trait, sont également cérébraux, et que le sperme paraît uniquement destiné à exciter la vitalité du germe. “ La jouissance vénérienne, dit-il, peut être considérée comme une joie extrêmement vive et de courte durée ; c'est le plaisir le plus vif, la sensation la plus délicieuse dont soient susceptibles les êtres sentans. Na nature a semblé, par-là, vouloir attacher un attrait puissant à l'acte important et universel de la reproduction.

“ L'animal en rut, l'homme dans l'attente du plaisir,

sont tourmentés du désir de satisfaire un besoin devenu impérieux, irrésistible; toutes les idées sont absorbées par celle-la; la pensée n'a plus de force; quelquefois la raison en reçoit de légères atteintes; c'est une véritable monomanie momentanée ... Les mâles, dans les espèces qui ne se marient que passagèrement, se livrent souvent des combats sanglans pour obtenir la possession d'une femelle; d'autres parcourent des espaces immenses pour le même objet: l'homme ne le cède souvent en rien aux animaux dans de pareilles circonstances. Immédiatement avant la consommation de l'act reproducteur, l'esprit est dans une sorte de rêvasserie, de mélancolie douce; il semble goûter à l'avance ce plaisir toujours impatientement attendu, et qui doit le plonger dans un océan de délices, la respiration est lente, expirante, entremêlée de longs soupirs, de soupirs sanglotans; le système musculaire est affaibli... Pendant l'acte vénérien, la sensation voluptueuse va toujours croissant jusqu'au moment où l'ébranlement nerveux devient tel qu'il offrirait tous les caractères d'une affection grave, si l'on n'en connaissait la cause; toutes les facultés cérébrales sont anéanties; la pensée est nulle; les sens sont insensible aux impressions des objets; l'insensibilité est générale et profonde, en sorte qu'on peut couper certains reptiles accouplés, sans pour cela les séparer; souvent la système musculaire entier est pris de spasme, de roideur, de convulsions; c'est quelquefois une syncope véritable, un état voisin de l'épilepsie...

“Immédiatement après la cessation de cette volupté convulsive, de cette surexcitation cérébrale, succède un état tout opposé, un affaissement général, proportionné à l'étendue, à l'activité du mouvement qui l'a précédé, aux dispositions du sujet, etc. Les facultés de l'esprit, les forces musculaires tombent dans un collapsus bien remarquable; les yeux, naguère si vifs, sont mornes, languissans; la physionomie exprime l'apathie, la tristesse, l'ennui, l'étonnement; le dégoût remplace les désirs; ordinairement alors l'objet

qui tout-à-l'heure captait toutes les affections, n'inspire plus que de l'indifférence, de l'éloignement, quelquefois même de l'aversion ; c'est aussi alors que l'auteur de la *Nouvelle Héloïse* pense que la femme peut s'assurer si l'homme est conduit vers elle par quelque autre sentiment que par celui de la passion que le même instant voit éclore et disparaître, et si la tendre amitié ne comblera pas de sa douce influence le vide affreux que cette passion laisse lorsqu'elle est satisfaite."

Tout confirme donc la proposition, en apparence si paradoxale, que tous les phénomènes qui se rattachent aux fonctions des parties sexuelles, ont pour centre de réunion le cerveau.

Examinons maintenant quelle est la partie cérébrale qui préside à l'instinct de la génération.

Le cervelet est l'organe de l'instinct de la génération.

Personne ne soutiendra que le penchant à la propagation, ou l'instinct de la génération, soit un produit artificiel de la volonté, de l'entendement, de l'éducation, ou d'une influence extérieure quelconque. Ainsi je ne m'arrêterai pas à prouver que cet instinct est une force indépendante, un penchant propre existant par lui-même. Je n'exposerai pas non plus son histoire naturelle, qui, d'un côté, est suffisamment connue de tout le monde, et d'un autre côté, m'entraînerait dans des détails d'histoire naturelle presque inépuisables. Je passe donc de suite à l'essentiel, en commençant par faire concevoir à mes lecteurs comment m'a pu venir cette idée, aussi étrangère aux principes physiologiques qu'à l'opinion générale.

Historique de la découverte que le cervelet est l'organe de l'instinct de la propagation.

Une jeune veuve se trouva attaquée, peu après la morte de son mari, de mélancolie et de violentes convulsions. Ces accès étaient précédés par une tension et un sentiment de chaleur très désagréables dans la nuque. Quelques instans après elle tombait par terre dans un état de roideur, jusqu'à ce qu'enfin la nuque et la colonne vertébrale fussent violemment retirées en arrière. La crise ne manquait jamais de se terminer par une évacuation qui avait lieu avec les tressaillemens de la volupté, et dans une véritable extase; après quoi, elle restait sans attaques pendant quelque temps.

Plusiers fois je lui soutins, avec le plat de la main, la nuque, durant ses accès, et j'y sentis une forte chaleur; mais j'y remarquai surtout une proéminence bombée très considérable. Plus tard, cette dame m'avoua que depuis son enfance il lui avait été impossible de résister à un besoin impérieux, et que dans les momens où ses désirs étaient les plus pressans, la tension et la sensation de chaleur brûlante dans la nuque l'incommodaient le plus.

Ces circonstances réveillèrent mon attention. Je me rappelai avoir remarqué des symptômes semblables dans des cas pareils, et je ne tardai pas à apprendre que des personnes d'un tempérament très ardent éprouvent dans la nuque une tension et une sensation de chaleur, dans certaines occasions, et surtout après des émissions excessives et inconsidérées, ou après une continence prolongée.

Apollonius de Rhodes dit, en parlant de l'amour passionné de Médée :

“Le feu qui la dévore s'attache à tous ses nerfs, et se fait sentir jusque derrière la tête, dans cet endroit où la douleur est la plus vive lorsqu'un amour extrême s'empare de tous les sens.”*

* *Histoire abrégée de la littérature grecque*, de M. Schœll, vol. I. p. 99.

Van der Haar avait déjà appelé l'attention des médecins sur la connexion qui existe entre certaines affections malades des parties génitales, et des mouvemens convulsifs, et des trémousse-mens des muscles, accompagnés de douleurs et de sentimens de chaleur dans la nuque.

Tissot a consigné des observations du même genre. Un horloger de dix-sept ans, toutes les fois qu'il provoquait une ejaculation par l'onanisme, perdait connaissance pour quelques instons, et éprouvait des mouvemens convulsifs de la tête, qui était violemment retirée en arrière, et son cou enflait. Pendant tout le temps de ces accès, qui finirent par devenir habituels chez lui, il sentait de violentes douleurs dans tout la partie postérieure du cou. A la fin, il en résulta une faiblesse extrême des muscles extenseurs du cou. Chez un autre sujet, les mêmes causes produisirent une paralysie complète de ces mêmes muscles, de manière que le malade laissait constamment pencher sa tête sur sa poitrine.

Préparé comme je l'étais par mes précédentes découvertes, l'idée ne dut pas m'échapper qu'il pourrait bien exister une connexion entre les fonctions de l'amour physique et les parties cérébrales placées dans la nuque. En très peu de temps j'eus recueilli un nombre prodigieux de faits à l'appui de cette idée.

Avant tout, je dois faire connaître au lecteur la forme et la situation de cette partie du cerveau qu'on appelle *cervelet*, et la manière dont son plus ou moins grand développement se manifeste à l'exterieur.

PLATE IV. 1. on voit la surface inférieure de deux lobes du cervelet. PLATE XV. 1, 1, sa surface supérieure. PLATE VIII. sa partie latérale. Les Pl. v. vi. x. xi. xii. xvii. représentent des préparations propres à faire connaître sa structure intérieure.

Le volume du cervelet diffère beaucoup chez différens sujets du même âge. Chez les adultes, sa largeur est de quatre à cinq pouces, et son épaisseur de vingt à vingt-cinq lignes; sa longueur de deux à trois pouces et quelques lignes.

Le cervelet est placé dans le crâne, dans les grandes fosses occipitales. Ses lobes touchent, sur le devant, au rocher des temporaux, et par derrière à la partie transversale de la *spina cruciata*. Latéralement, il s'étend jusqu'à la pointe de l'angle inférieur des pariétaux; il occupe toute la partie inférieure du crâne, depuis la partie large du procès mastoïdien d'un côté, jusqu'à la partie moyenne de la *spina cruciata*, où il y a ordinairement à l'extérieur une saillie, et jusqu'à la partie large du procès mastoïdien de l'autre côté. Dans le sens de la largeur, il occupe en entier les grandes fosses occipitales d'un procès mastoïdien à l'autre.

Comme les os crâniens sont très minces partout où le cervelet les touche, il faut que la forme de leur cavité intérieure corresponde exactement à leur proéminence extérieure, et cette dernière doit rendre exactement la forme du cervelet. Par conséquent, le crâne sera dans cette région plus étroit, plus large, plus aplati, plus bombé, plus bas, plus haut, selon que le cervelet s'étend plus ou moins dans différentes directions. Que l'on compare les Pl. VIII. X. XI. XII.

Quelques savans prétendent que l'on ne peut pas juger de la grandeur du cervelet dans l'homme vivant; car, disent-ils, depuis la saillie que l'on sent presque immédiatement au-dessus de la fossette du cou, jusqu'au trou occipital, il est impossible de tâter le crâne. Mais c'est précisément dans cet endroit que les deux lobes du cervelet s'écartent, et laissent entre eux un intervalle dans lequel est placée la portion inférieure de la partie verticale de la *spina cruciata*; et c'est par cette raison que la forme du cervelet ne se trouve nullement masquée. A-peu-près à un demi-pouce latéralement, la partie postérieure-inférieure de l'occipital se voûte vers le bord postérieur du procès mastoïdien. Or, plus cette proéminence est bombée, plus elle descend vers la nuque, plus elle s'élargit vers les oreilles, plus aussi le cervelet est grand; dans ce cas, la nuque est large et forte, le cou arrondi, fort

et large derrière les oreilles. Lorsqu'au contraire le cervelet est peu développé, ces parties seront plates, étroites, renfoncées ; la nuque sera peu large entre les procès mastoïdiens ; le cou, quoique épais en partant du tronc, sera étroit dans l'intervalle d'un procès mastoïdien à l'autre.

Ceci suffira pour mettre le lecteur à même de juger du développement plus ou moins considérable du cervelet.

Je considérerai ce sujet dans l'état de santé et naturel, dans l'état de santé modifié artificiellement, et dans l'état maladie.

Preuves prises dans l'état de santé, que le cervelet est l'organe de l'instinct de la propagation.

1. Chez les animaux dont la propagation ne s'effectue pas par le concours de deux sexes, on ne distingue rien qui ressemble au cervelet. Chez tous les animaux, au contraire, qui s'accouplent, on trouve une partie cérébrale placée immédiatement au-dessus de la moelle épinière, partie qui remplace le cervelet dont sont doués les animaux plus parfaits.

S'il était possible de démontrer que cette conformation a lieu sans exception dans les plus petits animaux, soit de terre, soit aquatiques, cette circonstance suffirait seule pour établir que le cervelet est l'organe de l'instinct de la propagation.

A peine la force des faits m'eut-elle suggéré mes idées sur les fonctions du cervelet, que je fus frappé d'une difficulté. Les plantes se propagent ; donc, il n'est besoin d'aucune partie cérébrale pour que l'acte de la propagation s'effectue.

Mais il faut bien distinguer ce qui, dans la propagation, appartient à la vie purement organique, de ce qui appartient à la vie animale.

La vie organique forme les principes d'êtres de son espèce, et opère la fécondation et le développement

sans conscience et sans participation de l'individu. La vie animale fait, de cette fonction sans conscience, une fonction accompagnée de conscience; cette fonction devient un besoin, un penchant extrêmement actif, et le satisfaire produit le sentiment de la volupté.

Dans les animaux plus parfaits, ces deux fonctions se trouvent réunies. La fonction organique est en rapport avec la fonction animale, de manière cependant que dans l'acte de la propagation, chacune d'elles joue un rôle qui peut être indépendant de celui de l'autre.

Les expériences de quelques naturalistes paraissent prouver, que l'on peut féconder les œufs de femelles de certaines espèces avec la liqueur séminale prise du mâle, de la même manière que les germes des plantes avec le pollen pris sur les étamines. Des conceptions qui ont eu lieu pendant la défaillance, pendant l'ivresse, ou un autre étourdissement qui abolissait la conscience, ne sont peut-être pas des événemens absolument rares. Les instrumens organiques de la propagation ont leur vie à eux, et ils entrent en activité indépendamment de la conscience de l'animal. Le coït exercé par la violence, l'approche d'un homme, accompagné de dégoût et d'horreur même de la part de la femme, ont la conception pour suite. Je connais des femmes qui, dans aucune période de leur vie, n'ont senti le moindre penchant pour les hommes, qui étaient incapables de comprendre comment un homme peut inspirer à une femme d'autres sentimens qu'un enfant ou une autre femme, qui ne cédaient aux desirs de leurs maris que par devoir, et qui, quoiqu'elles fussent devenues mères plusieurs fois, n'ont jamais éprouvé la moindre sensation de volupté.

Tout le monde sait qu'il n'existe aucune proportion entre la fécondité et le penchant à exercer le coït. Combien de fois les vœux des plus tendres époux manquent-ils d'être remplis! Il paraît même que, dans certains cas, un amour trop ardent peut mettre

obstacle à la fécondation. L'on a coutume de modérer l'ardeur des jumens, en les frappant, en les fatiguant, avant de les mener à l'étalon, ou en jetant sur elles de l'eau froide. J'ai eu plusieurs fois des métis femelles d'oiseaux, qui sollicitaient avec ardeur l'amour de tous les mâles, qui construisaient leur nid avec une activité infatigable, pondaient, couvaient avec une persévérance exemplaire, et qui lorsqu'elles voyaient leurs espérances déçues, s'abandonnaient à une profonde tristesse. Tout le monde connaît l'ardeur amoureuse aussi violente que stérile du mulet.

Comme donc la fécondité organique est absolument indépendante de l'accouplement animal, l'existence de la fécondation sans partie cérébrale ne peut nullement être alléguée pour prouver, que l'instinct de la reproduction est possible sans le concours du cerveau.

2. Dans la description du cervelet,* j'ai montré que chez la mammifères, il est composé d'une partie moyenne (la partie fondamentale), et des parties latérales, les lobes.

Chez tous les ovipares, chez les insectes, les poissons et les amphibies, la partie fondamentale constitue tout le cervelet.

Les oiseaux, (Pl. I. fig. 2. 5. 7. 6. n'ont que cette partie intégrante du cervelet que j'appelle partie fondamentale ou primitive, et que d'autres ont appelée *éminence vermiculaire* (PROCESSUS VERMIFORMIS.)

Chez tous les mammifères, au contraire, les deux parties latérales existent ; elles ont cependant, comme la partie fondamentale, différentes formes chez les différentes espèces, (Pl. III. 1. et IV. 1. représentent la surface inférieure du cervelet, et Pl. XVI. sa surface supérieure.

Cette différence essentielle du cervelet dans des espèces d'animaux qui diffèrent essentiellement par leur mode de propagation, fait présumer qu'il existe une connexion intime entre le cervelet et l'acte de la

* Tome 1 de mon grand ouvrage, p. 149, in-4o, et p. 176, in-fol.

propagation. Mais je passe à des preuves plus rigoureuses.

3. La manifestation successive, la croissance et la décroissance de l'instinct de la propagation, sont dans un rapport direct avec le développement et la décroissance du cervelet.

Chez l'enfant nouveau-né, le cervelet est, de toutes les parties cérébrales, la moins développée, à la vérité, sa proportion au cerveau est différente dans chaque individu; elle est tantôt, à-peu-près comme un à neuf, tantôt comme un à vingt, et quelquefois plus petite encore. Dans l'adulte, au contraire, elle est comme un à cinq, tout au moins comme un à sept. Les fibres nerveuses du cervelet sont, de tout l'encéphale, celles qui, les dernières, se montrent bien distinctes. Le cervelet acquiert son plus haut degré de développement vers la dix-huitième ou la vingt-sixième année.

Et c'est dans le même ordre que se développe le penchant de l'amour qui se glisse imperceptiblement dans le sein du jeune homme et de la jeune fille; les yeux deviennent plus brillants, le regard plus expressif, la démarche acquiert de la prétention, l'un et l'autre tombent dans une inexplicable mélancolie enfantine; l'un et l'autre sentent un besoin dont ils ne sauraient se rendre compte, des désirs confus, jusqu'à ce qu'enfin la présence de l'objet aimé donne le mot de l'énigme, et répande sur l'âme tout entière des torrens de délices. La jeune fille et le jeune homme se trouvent élevés par la sentiment qui les domine au-dessus même de l'idéal de toute perfection; la résistance faible et involontaire que toute personne du sexe oppose aux premières entreprises d'un homme, devient une vertu angélique, et prête une magie nouvelle à l'amour, jusqu'à ce qu'enfin l'homme et la femme aient goûté, dans les bras l'un de l'autre, le suprême bonheur.

M. Sømmerring, Ackermann, les frères Wenzel et d'autres, soutiennent qu'à l'âge de deux ou trois ans, tout au plus, le cervelet, tout comme le cerveau, ont acquis leur croissance complète.

M. Sømmerring, que les autres auteurs ont copié, s'est trompé ; il fonde son assertion sur ce qu'il a trouvé le cerveau d'un garçon de deux ans aussi grand que celui d'un adulte dont il fit l'ouverture en même temps. Il supposait que tous les individus humains ont une masse encéphalique à-peu-près égale ; et dans cette hypothèse, sa conclusion serait juste. Mais comme le poids de la masse cérébrale varie dans les adultes, qu'il est tantôt de deux livres, tantôt de deux livres et demie, de trois livres, et quelquefois plus considérable encore, il peut bien arriver qu'un garçon de deux à trois ans, organisé de manière à acquérir de grandes qualités et de grandes facultés, ait une masse cérébrale plus grande qu'un adulte doué de qualités et de facultés très médiocres.

Dans nos nombreuses dissections du cerveau, nous avons toujours été très particulièrement attentifs au cervelet. Mais si j'en excepte quelques cas extraordinaires, nous n'avons jamais, jusqu'à l'âge de seize à vingt ans, trouvé la même proportion entre le cervelet et le cerveau que chez les adultes. Il est facile de constater la vérité de ce fait, en comparant des crânes de jeunes garçons et de jeunes filles, avec des crânes d'hommes et de femmes. Quelle différence déjà entre le crâne d'un garçon de dix à douze ans, (Pl. xxxvii.,) et celui d'un enfant nouveau-né, (Pl. xli.!) Chez l'enfant nouveau-né, (Pl. xli.,) toute la base du crâne est encore rétrécie en un cône tronqué ; les procès mastoïdiens sont encore très rapprochés l'un de l'autre ; les bosses occipitales ne sont point encore proéminentes, elles sont plates. Dans la deuxième année, les procès mastoïdiens s'écartent davantage l'un de l'autre ; les fosses occipitales se creusent davantage en segment de sphère. Tous ces changemens sont encore bien plus sensibles dans le crâne du garçon de dix à douze ans. On remarque de même ce développement encore imparfait du cervelet, dans le crâne de la jeune fille de six ans, (Pl. xxxviii.) En tournant vers soi la base du crâne d'un sujet impubère, on voit de suite que la

distance d'un procès mastoïdien à l'autre, distance qui détermine le diamètre du cervelet, est beaucoup moindre que celle d'un pariétal à l'autre. Chez l'adulte, au contraire, les deux distances sont, d'ordinaire, à-peu-près les mêmes. Aussi ces faits ont-ils déterminé M. Chaussier à accorder enfin que le cervelet ne se développe que vers l'âge de l'adolescence.

A l'approche de la vieillesse, la turgescence nerveuse du cervelet diminue, et dans la même proportion, l'homme et la femme deviennent peu à peu étrangers à leur destination, jusqu'à ce qu'enfin l'un comme l'autre se trouvent isolés et sans but.

M. Rudolphi assure n'avoir jamais trouvé le cervelet plus petit chez les sujets âgés que chez les adultes.

Comme dans l'âge avancé toute la masse des nerfs éprouve une diminution, pourquoi le cervelet ferait-il seul exception à cette règle? Que l'on compare encore les fosses occipitales chez des adultes et chez des sujets très âgés. A moins que tous les os craniens ne soient déjà amincis par l'effet de la décrépitude, on trouvera les fosses occipitales moins transparentes chez les sujets âgés que chez les adultes, et cela parce qu'il s'est déposé de la masse osseuse à leur surface interne, au fur et à mesure que le cervelet s'est rapetissé. J'ai dans ma collection des crânes où le cervelet s'était rapetissé presque jusqu'aux dimensions de celui d'un enfant nouveau-né, et où l'espace qu'il occupait a été resserré beaucoup, non-seulement par l'épaississement des parois des fosses occipitales, mais encore par celui des rochers.

"4. La nature ne suit pas de marche uniforme dans le développement du cervelet. L'on sait quelle est l'influence du climat sur l'époque à laquelle les deux sexes deviennent capables de l'acte de la génération. Mais il existe encore de grandes différences à cet égard d'individu à individu, dans le même lieu et dans la même famille. Tel garçon montre déjà de l'intérêt pour le sexe dès l'âge de trois à quatre ans; chez d'autres, cet instinct dort jusqu'à la quatorzième ou quinzième année.

La même différences se manifeste sur le retour de l'âge. Chez tel homme la puissance virile est anéantie dès l'âge de quarante ans ; chez tel autre, elle fait entendre encore le chant du cygne à soixante-dix, à quatre-vingts ans.

Il n'est par rare que l'instinct de la propagation se manifeste avant l'âge ordinaire, de la manière la plus prononcée. J'ai vu à Paris un garçon de cinq ans qui, sous le rapport des forces corporelles, paraissait en avoir seize ; ses parties sexuelles étaient entièrement développées ; il avait une forte barbe, une voix rauque et mâle, en un mot tous les signes d'une virilité pleine et entière. Depuis quelques années déjà il avait satisfait, avec des femmes, l'instinct de la propagation. Je ne m'en laissai pas imposer par ces signes extérieurs. Je n'attribuai pas la manifestation précoce de l'instinct de la propagation au développement prématuré des parties sexuelles ; car peu auparavant j'avais vu une fille de neuf ans qui paraissait être une femme toute formée. Elle ne manifesta que l'indifférence d'un enfant lorsque ses parens me la montrèrent, et jamais elle n'avait témoigné le plus léger intérêt pour rien de ce qui a rapport à l'amour physique. On trouve dans Buffon et ailleurs des exemples semblables de grands enfans qui avaient toutes les marques de la puberté, sans que l'on remarquât rien en eux qui eût rapport à l'instinct de la propagation. Chez la fille en question, le cervelet n'avait qu'un développement très insignifiant ; mais il en est tout autrement du garçon de cinq ans : sa nuque était large, bombée et robuste, quoique le reste de sa tête eût acquis à peine les dimensions ordinaires à son âge : aussi ce garçon était-il enfant sous tous les autres rapports.

Nous trouvâmes le cervelet tout aussi développé chez un garçon de dix ans qui était détenu dans une maison de correction, à Leipzig, pour avoir violé une jeune fille. A Paris, j'ai vu le garçon d'une mulâtre, âgé de moins de trois ans ; il se jetait non-seulement sur de petites filles, mais sur des femmes, et les som-

mait avec audace et avec opiniâtreté de satisfaire ses désirs. Il ressentait dans les parties sexuelles, qui n'étaient point prématurément développées, mais qui présentaient des dimensions proportionnées à son âge, des erections plus que momentanées. Comme il était environné de filles qui se prêtaient à satisfaire ses désirs, comme a un jeu piquant pour elles, par sa singularité, il mourut de consommation avant d'avoir atteint la fin de sa quatrième année. Son cervelet était extraordinairement développé ; le reste de sa tête avait les dimensions ordinaires à son âge. Aussi ce n'était, sous tous les autres rapports, qu'un enfant mal élevé et gâté.

Il est réellement étonnant que les médecins et les naturalistes n'aient jamais cherché le siège du penchant aux plaisirs de l'amour, ailleurs que dans les parties sexuelles. Tous les jours on voit de jeunes garçons et de jeunes filles de trois, quatre, cinq ans, se livrer avec fureur à l'onanisme, sans répandre le moindre fluide, et sans que le développement de leurs parties pût faire craindre pour eux un penchant à ce vice. L'on se trompe beaucoup en croyant empêcher des enfans ainsi organisés, de contracter de pernicieuses habitudes en les garantissant contre les séductions du dehors. Cette précaution est applicable aux enfans ordinaires ; mais il en est dont la nature elle-même devient le séducteur. Qui est-ce donc qui séduit les jeunes singes ? Du reste, il arrive chez les vieillards quelque chose de semblable à ce qui a lieu chez les enfans ; leurs parties sexuelles sont souvent déjà paralysées, que des désirs effrénés les dévorent encore.

Tous les faits que je viens de citer d'enfans dont les parties sexuelles étaient ou n'étaient pas développées, et qui non-seulement sentaient l'impulsion de l'instinct de la propagation, mais étaient doués aussi de la faculté d'exercer le coït, et chez lesquels le cervelet seul avait acquis un développement prématuré, prouvent, jusqu'à l'évidence, qu'il faut chercher le siège de l'instinct de la propagation, non pas dans les parties génitales, mais dans le cervelet.

5. L'énergie de l'instinct de la propagation est, chez les adultes, dans un rapport direct avec le développement du cervelet.

Il est des hommes et des femmes qui n'accomplissent l'acte de la cohabitation que par manière d'acquit. Le coït leur inspire de la répugnance et du dégoût. Ceux qui y attachent un grand prix sont, à leurs yeux, des personnes sensuelles, se ravalant au-dessous de la brute. On ne remarque ni chez ces hommes, ni chez ces femmes, la moindre différence des parties génitales par laquelle ils se distinguent des autres individus ; mais dans ces cas, il y a toujours faible développement du cervelet.

Par la complaisance de M. le baron Larrey, j'ai vu un soldat chez qui l'antipathie pour les femmes était dégénérée en véritable manie. L'aspect d'une femme produisait en lui des convulsions violentes, et le faisait presque entrer en fureur. M. le docteur Spurzheim a vu un exemple semblable en Angleterre. Chez l'un et l'autre de ces sujets, le développement du cervelet était absolument resté en arrière.* Un médecin de Vienna, doué de talents très distingués, montrait une antipathie marquée pour les femmes, singularité que, dans le tems, nous attribuâmes à son goût pour la solitude. Quelques années après il mourut de la phthisie pulmonaire. Dans son crâne très volumineux (Pl. XLIV. 1. 1. 1. 1.) l'espace pour le cervelet est extrêmement petit ; la distance d'un procès mastoïdien à l'autre est à peine de trois pouces : les bosses occipitales, au lieu d'être bombées, sont en partie tout-à-fait plates, en partie même déprimées, et par cela même d'une surface inégale.

Dans un abbé français, qui vivait à Vienna, nous admirions d'autant plus une continence exemplaire, et une conduite singulièrement réservée vis-à-vis des

* On m'a objecté qu'un organe ne saurait produire un effet opposé à ses fonctions. Mais l'estomac n'est. Il pas l'organe de l'appétit, et n'arrive-t-il pas qu'à raison d'une affection malade de ce viscère, nous avons du dégoût pour tous les alimens ?

dames, qu'il aimait la parure comme une femme, et passait la journée à aller d'une société dans une autre. Il mourut, et son crâne est du nombre de ceux que je conserve comme exemple d'un très faible développement du cervelet. Les bosses occipitales sont tellement plates, que l'on dirait que l'on a coupé la partie inférieure de l'occipital, (Pl. XLVIII. 1. 1.)

La dame dont j'ai parlé plus haut, p. 159, a la tête grande et belle comme celle d'un homme ; elle possède des talens distingués ; mais sa nuque a très peu de largeur au-dessous des oreilles, ce qui indique un faible développement du cervelet. C'est cette conformation que j'ai trouvée jusqu'ici chez toutes les personnes à qui la nature a refusé, entièrement, ou auxquelles elle a accordé à un faible degré le besoin de l'amour physique et le plaisir pendant l'acte vénérien.

Une semblable organisation n'emporte pas de points de contact avec le beau sexe. Les portraits de Charles XII. (Pl. LXI. fig. 1.) de Newton, de Kant montrent, et certainement sans l'intention des artistes, que le cou de ces hommes célèbres était peu large, et par conséquent leur cervelet très peu développé. Est-il étonnant après cela que Saint-Thomas à Kempis, dans le portrait duquel je reconnais les mêmes caractères, se soit armé d'un tison pour repousser loin de lui une jeune fille remplie d'attraits ?

Voilà les hommes que la nature appelle au célibat.

Pour se faire une idée de la différence qui existe entre un faible développement et un développement considérable du cervelet, que l'on compare le crâne (Pl. VIII.) avec ceux dont je viens de parler tout-à-l'heure, et encore avec ceux où cet organe a acquis un développement extraordinaire, (Pl. XXXIX. et XL.)

A Vienne, une diseuse de bonne aventure, dévote et superstitieuse, quoique déjà âgée, entretenait toujours deux amans. Dans son petit crâne sphérique, (Pl. L. 1.) les bosses occipitales sont très larges, très bombés, et très proéminentes vers le bas. La même conformation a lieu dans le crâne très large, (Pl. XXVII.) d'une femme

qui a été détenue pour vol dans la maison de correction de Grætz, en Stirie, et qui auparavant suivait les armées comme fille de joie. Un maître de langue qui, sous tous les autres rapports, menait une vie forte régulière, assurait qu'il ne pouvait jamais se rassasier de jouissances avec les femmes. La partie postérieure inférieure de son crâne, (Pl. xxxix. 1. 1.) est très large, et tellement bombée de haut en bas, qu'il descend de plus d'un pouce plus bas au-dessous du méat auditif extérieur, que le crâne du jeune médecin solitaire, et du chaste abbé français. Le même conformation se trouve encore chez un médecin célèbre qui, en très peu de temps, avait mis au tombeau, l'une après l'autre, trois épouses jeunes et robustes, et qui, à l'âge d'à-peu-près cinquante ans, crut devoir prendre le parti d'entretenir dans sa maison quatre filles vigoureuses. Ce qu'il y a de plus remarquable, c'est qu'il n'existait pas la moindre trace de jalousie entre ces personnes, probablement par la raison que, comme elles me l'ont dit, elles étaient toutes les quatre plus que rassasiées de jouissance.

Que l'on compare aussi aux portraits de Charles XII, de Newton et de Kant, ceux de Piron et de Mirabeau, (Pl. lxi. fig. 2,) l'un et l'autre très sensuels ; de Nicolas Chorier, auteur de l'ouvrage intitulé ; *Meursii elegantiae latini sermonis*, traduit en français sous le titre d' *Académie des Dames* ; de l'Arétin, aussi voluptueux que caustique ; de François I^{er}, qui avait coutume de dire qu'*une cour sans femmes est une année sans printemps, et un printemps sans roses*. Les anciens sculpteurs donnent cette même nuque large et forte à Epicure, en quoi ils n'avaient certainement pas l'intention de lui attribuer les forces d'Hercule. L'on peut constater tous les jours cette observation dans la société.

Lorsque le cervelet acquiert un développement excessif, au point que la nuque forme, de haut en bas, une espèce de large poche bombée, l'instinct doit acquérir aussi une force d'impulsion désordonnée. Dans

ce cas, lorsque des motifs d'un ordre supérieur, et des qualités et des facultés éminentes ne viennent pas au secours d'individus ainsi organisés, les jouissances avec l'autre sexe, conformes aux intentions de la nature, ne suffisent point pour satisfaire leurs desirs et leur paraissent fades ; ils ne brûlent que d'un feu semblable à celui auquel se trouvent d'ordinaire réduits, par la réclusion, les membres des nombreuses communautés d'un même sexe.

J'ai eu occasion d'observer plusieurs hommes et plusieurs femmes qui étaient les esclaves de ce goût dépravé. La nuque large et voûtée frappe surtout chez les femmes. Presque toutes les femmes livrées à ce penchant ont, en même temps, une constitution robuste et mâle. Les hommes, au contraire, ont un physique efféminé, les membres arrondis, gras, potelés et petits, les mamelles très apparentes. Les anciens historiens dissent de Néron, livré aux plus sales voluptés : " que ses inclinations étaient peintes sur sa figure ; qu'il avait les yeux petits, entourés de graisse, LE COU GRAS, le ventre gros et les jambes minces ; que ses cheveux blonds et son visage plutôt délicat que majestueux, le faisaient d'abord reconnaître pour un efféminé." J'ai trouvé cependant quelques exceptions à cette règle.

En Hollande nous vîmes, dans une maison de correction, quelques hommes déjà âgés qui, avec une organisation avantageuse, du reste, s'étaient livrés à de semblables désordres. Ils avouaient leur impuissance de résister à l'impétuosité de leur penchant, et plusieurs fois déjà ils étaient retombés dans le même vice ; ils étaient convaincus que leur conduite était blâmable et indécente ; mais ils demandaient qu'on ne les relachât pas, parce que, s'ils recouvraient la liberté, disaient-ils, leur passion les entraînerait encore. Nous fîmes remarquer à ceux qui nous accompagnaient le développement excessif du cervelet chez ces individus.

Que l'on me permette de faire ici une observation.

La personne qui vit dans un état peu conforme à sa vocation, se trouve en contradiction avec son état et avec elle-même. Est-il prudent, est-il juste de surprendre à des jeunes gens dans le cœur desquels couve peut-être sous la cendre un feu qu'ils méconnaissent, des vœux qui pendant toute leur vie les mettront en contradiction avec eux-mêmes ? Les différens états, dans la société, ne devraient-ils pas résulter de la différente organisation des individus qui s'y vouent ? Voulez-vous des Vestales et des Cénobites, choisissez ceux *qui sont sortis eunuques du ventre de leur mère*.

Ce que j'ai dit de l'espèce humaine, a lieu également chez les animaux. Il y a des chiens, des chevaux, etc., qui ne s'accouplent jamais ; il y a des femelles qui, quoique leurs parties sexuelles offrent tous les signes de la chaleur, ne permettent pas l'accès au mâle. Là aussi la cause de cette anomalie se trouve toujours dans le développement défectueux du cerveau. Près de Berlin, on nous conduisit dans une étable où se trouvaient cinq taureaux : chez l'un d'eux, nous ne trouvâmes pas la nuque à beaucoup près aussi large ni aussi robuste que chez les autres ; et nous déclarâmes que ce taureau ne devait pas être, à beaucoup près, aussi bon mâle que les autres. " Vous avez raison, nous dit le propriétaire, M. de Beyme, ci-devant ministre d'état : on l'engraisse parce qu'il n'est pas bon à la tête du troupeau."

Les taureaux, les étalons et les béliers, sont d'autant plus ardens, au contraire, que leur nuque est plus large, plus arrondie et plus robuste. A Vienne, tous les amateurs de pigeons savent que les pigeons mâles qui ont la nuque la plus forte, sont ceux qui poursuivent les femelles avec le plus d'ardeur, et l'on profite de cette circonstance pour enlever les pigeons femelles du voisin, et les faire venir à son colombier. On prive de sa femelle le pigeon mâle le plus ardent ; alors il fait des excursions dans les autres colombiers, y enlève des femelles, et les force à le suivre chez lui ; bientôt le mâle de la colombe enlevée suit sa femelle, et c'est

ainsi que les enlèvemens se succèdent jusqu'à ce que le propriétaire dépouillé mette fin à ce jeu par la mort du ravisseur. Les rats, les souris, la taupe, le cochon-d'Inde, ont le cervelet très grand, et c'est pour cela même que l'instinct de la propagation est chez eux très actif.

Chez des animaux nourris abondamment, chez des serins jaunes, surtout chez des pigeons et des ranards de l'un et l'autre sexe, chez des chiens, des jumens, des étalons, des singes, on remarque assez souvent la même dépravation dont je viens de parler comme ayant lieu chez l'espèce humaine.

Tout autant de preuves que l'instinct de la propagation est dans une proportion directe avec le degré de développement du cervelet, et que par conséquent cette partie cérébrale doit être considérée comme l'organe de cet instinct.

6. La différence qui existe dans les deux sexes, pour le degré auquel se manifeste chez eux l'instinct de la propagation, dépend encore du degré de développement du cervelet.

C'est une question de savoir si, tant chez l'homme que chez les animaux, l'instinct de la propagation a un degré d'activité plus grand chez le mâle ou chez la femelle ?

J'accorde qu'il existe des exceptions pour certains individus ; mais en général l'homme est doué d'un instinct de la propagation bien plus impérieux que la femme ; et les observations suivantes vont prouver la vérité de ce que j'avance.

Chez les animaux, les femelles de plusieurs espèces, telles que les chiennes, les jumens, les vaches, sont restreintes, pour la manifestation de l'instinct de la propagation, à certaines saisons, à certaines périodes, tandis que les mâles sont disposés toute l'année à se livrer à l'amour. L'état habituel de ces femelles ne suffit donc pas pour entretenir en activité l'instinct de la propagation. Il faut qu'il survienne, en outre, une circonstance qui irrite leurs organes pour leur faire souffrir ou desirer l'approche du mâle.

Même chez ceux des animaux qui vivent dans un mariage aussi durable que le vie, comme la plupart des espèces d'oiseaux, les martres, les renards, les mâles sont plus ardents et plus disposés aux infidélités que les femelles. De-là, chez ces animaux, les jalousies et les combats perpétuels. Il est à remarquer que dans certaines espèces les femelles sont très jalouses, tandis que dans d'autres elles ne donnent aucune marque de jalousie.

Dans notre espèce aussi, l'homme est entraîné aux plaisirs de l'amour avec plus d'impétuosité que la femme. Hippocrate déjà avait consigné cette vérité. La nature a imposé à la femme les inconvénients de la grossesse, les douleurs de l'enfantement, le devoir d'allaiter et de soigner les enfans. Elle a organisé la femme tout entière pour parvenir à ce but important et élevé. Chez l'homme, au contraire, tout ce qui a rapport à la propagation est restreint à la seule fécondation. Les plaisirs de l'amour sont un besoin impérieux pour le jeune homme, pour l'homme fait, et souvent encore pour le vieillard. Toutes les institutions sociales attestent l'abus que fait notre sexe de la supériorité de ses forces, et portent l'empreinte de son penchant jaloux pour la volupté.

Voyons maintenant si ces phénomènes s'expliquent par son organisation.

On pensait jusqu'ici que l'homme étant généralement plus fort, ses penchans doivent être plus violens par cela seul. Mais j'ai prouvé, dans la section sur l'organe de l'âme, qu'il n'existe absolument pas de proportion directe entre la violence des penchans, et l'activité des facultés d'un côté, et la force de la constitution prise collectivement de l'autre. Les animaux petits sont, d'ordinaire, plus ardents pour l'amour que les grands. Qui ne sait que souvent des hommes grands et des femmes grandes sont très indolens, et des personnes petites et faibles très ardentes dans la jouissance de volupté?

La différence de l'éducation n'explique rien non plus;

car d'abord son influence ne va pas jusqu'à détruire les dispositions naturelles. En second lieu, l'on ne doit pas oublier que même l'éducation, les institutions et les lois sont un résultat de notre organisation ; ce n'est pas nous qui produisons tout cela, c'est l'auteur de notre être qui le produit par nous. En troisième lieu enfin, comment chez les animaux la différence de la manifestation de l'instinct de la propagation dans les deux sexes, pourrait-elle être produite par l'éducation ?

Non, il en est tout autrement ; une loi éternelle de la nature doit être fondée sur une base toute différente. Aussi en général le cervelet est-il sensiblement plus grand chez les mâles que chez les femelles. Dans la plupart des cas, lorsque l'on place des cerveaux d'homme et de femme, ou d'animaux mâles et d'animaux femelles à côté l'un de l'autre, celui de l'homme ou du mâle se distingue par un plus grand cervelet. La meilleure manière de rendre cette différence sensible, c'est de placer les encéphales dans l'eau afin qu'ils conservent leur forme, et ne s'applatissent pas par leur propre poids.

Cette observation s'est confirmée sur tous les animaux que j'ai été à même d'examiner, depuis la musaraigne jusqu'à l'éléphant.

Il paraîtrait presque que cette différence est plus marquée dans l'espèce humaine que dans les autres espèces d'animaux. Aussi n'existe-t-il guère d'animal avec lequel l'homme doive être tenté de troquer, si l'on met dans la balance qu'il est à même de jouir toute sa vie et dans toutes les saisons, que sa jouissance est la plus parfaite, etc. Que l'on compare les cervelets de femmes, PL. IV. X. XIII. avec les cervelets d'hommes, PL. V. VIII XI. XII. XV. ainsi que tous les crânes de femmes avec les crânes d'hommes.

On pourrait objecter que l'homme ayant en général une masse cérébrale plus considérable que la femme, doit avoir aussi un plus grand cervelet.

Mais j'ai montré qu'il n'existe pas de proportion fixe des parties cérébrales entre elles. Le cervelet est

indépendant du cerveau, et forme un organe propre. Quelquefois il existe, chez le même sujet, un grand cerveau et un cervelet extrêmement petit ; d'autres fois le cervelet est très développé, et le cerveau très petit. Le jeune médecin dont j'ai parlé plus haut, qui fuyait les femmes, avait l'une des plus grosses têtes et l'un des plus grands cerveaux, et son cervelet était très petit. La diseuse de bonne aventure superstitieuse, au contraire, n'avait pas la moitié autant de cerveau que le jeune médecin, et son cervelet était beaucoup plus grand. En traitant de l'organe de l'amour de la progéniture, je montrerai que certaines parties cérébrales sont plus développées chez la femme que chez l'homme. Par conséquent cette objection se réduit à rien.

Pour faire cette observation sur les animaux, il faut connaître très exactement la situation du cervelet dans le crâne. Dans plusieurs animaux, surtout chez les espèces qui ne marchent jamais debout, le cervelet est placé horizontalement et presque en totalité derrière le cerveau. Voyez Pl. xxxiii. les cerveaux du kangourou, fig. 3, du tigre, fig. 5. Chez ces animaux-là, on reconnaît le degré de son développement à la partie postérieure du crâne, au-dessus et des deux côtés du trou occipital.

Dans d'autres, le cervelet est à-peu-près comme chez l'homme, recouvert, en entier ou en partie, par les lobes postérieurs du cerveau, et ce n'est que par l'inspection de la base du crâne que l'on peut s'assurer de son plus ou moins de développement. Voyez Pl. xxxiii. fig. 4, le cerveau du lion, et Pl. xxxiv. celui du singe, fig. 1, et de l'orang-outang. fig. 2 et 3.

Chez les oiseaux, le cervelet formé seulement par la proéminence vermiculaire ou la partie fondamentale, s'étend de la région postérieure moyenne des deux hémisphères du cerveau, jusqu'au trou occipital, (Pl. i. fig. 11, 5, 7, 6;) mais il ne remplit que la partie moyenne de l'occipital, car les parties latérales contiennent les organes de l'ouïe. Cette partie moyenne

est constamment plus large et plus bombée chez les oiseaux mâles que chez les oiseaux femelles. La Pl. LVII. représente, fig. 1, le crâne d'un coq ; fig. 2, celui d'une poule ; fig. 4, celui d'une dinde, et fig. 5, celui d'un coq-d'Inde. Comparez Pl. LVIII. le crâne du rat des prés, mâle, fig. 2, avec celui de la femme, fig. 1 ; le crâne du chat mâle, fig. 4, avec celui de la chatte, fig. 3, et le crâne du chien mâle, fig. 6, avec celui de la chienne, fig. 7, ainsi que Pl. LIX. le crâne du veau mâle, fig. 2, avec celui du veau femelle, fig. 1.*

Il ne faut pas oublier ici que la différence des dimensions du cervelet est plus grande, d'un sexe à l'autre, chez les espèces dans lesquelles les mâles sont, en tout temps, capables de s'accoupler, et où les femelles sont restreintes à cet égard à de certaines périodes, que chez les espèces dans lesquelles le mâle et la femelle sont l'un comme l'autre sous la même influence périodique.

Ainsi donc, la conformation du cervelet chez les deux sexes, s'accorde parfaitement avec ce phénomène physiologique, que l'instinct de la propagation est plus puissant chez les mâles que chez les femelles, et cet accord prouve encore que le cervelet est l'organe de cet instinct.

7. Le genre de caresses que se font certains animaux, aurait dû réveiller, depuis long-temps, l'attention des naturalistes. Tantôt c'est le mâle, tantôt la femelle, qui a l'habitude d'irriter la nuque de l'objet de ses désirs. Long-temps avant l'accouplement, le chat mâle mord amoureusement la nuque de la chatte, et quelquefois il continue ce jeu pendant une journée entière. J'ai vu souvent des chiennes en chaleur, donner à des chiens, peu ardens, des coupes de museau dans la nuque, pour les provoquer à l'accouplement. Le canard mâle, avant de procéder à l'acte de la fécondation, monte tranquillement sur la canne et lui passe trois ou quatre fois le bec sur la nuque, ce n'est qu'alors que la canne se blottit, et que l'accouplement a lieu.

* Dans toutes les figures des Planches LVII. et LVIII., les bosses occipitales sont marquées 1. 1.

Au printemps, j'ai l'occasion d'observer, à mon aise, les amours des moineaux, d'une chaumière placée dans mon jardin. Le mâle, en poussant des cris, expression de l'ardeur qu'il ressent, fait des sauts autour de la femelle, la tête fortement retirée en arrière, et les ailes déployées; la femelle paraît poursuivre le mâle et saute à tous momens sur lui, en lui donnant de forts coups de bec dans la nuque; après ce prélude, tous les deux gagnent en toute hâte un arbre où ils s'accouplent.

Les preuves que j'ai alléguées jusqu'ici sont suffisantes pour établir que le cervelet est l'organe de l'instinct de la propagation. J'en ai encore quelques autres, mais je me réserve de les exposer plus bas.

Observations générales sur l'organe de l'instinct de la propagation, et sur cet instinct lui-même dans l'état de santé.

Les Grecs, les Arabes, et quelques pédagogues modernes, ont regardé le cervelet comme le siège de la mémoire. Willis déduisait le talent pour la musique, de la mollesse de sa structure; et Malacarne veut déterminer le degré des facultés intellectuelles, d'après le nombre de ses feuilletts. M. Portal croit que le cervelet sécrète les esprits animaux, ou qu'il est destiné à remplir les fonctions du cerveau, dans le cas où celui-ci serait attaqué de maladie. Reil le considère comme une pile voltaïque. Plusieurs physiologistes le regardent comme la source de la vie organique: hypothèses qui ne sont appuyées sur aucun fait.

Tout comme la force de l'instinct de la propagation n'est dans aucune proportion avec la fécondité, de même il n'y a non plus aucune proportion entre le développement du cervelet et celui des parties sexuelles.

Il est indubitable que l'organe de l'instinct de la propagation fait discerner à chaque animal, le mâle et

la femelle de son espèce ; on serait même tenté, dans certains cas, d'admettre qu'il établit dans la nature une paix générale entre tout ce qui est mâle avec tout ce qui est femelle. On sait que beaucoup d'animaux mâles, surtout les singes, les chiens, les étalons, les perroquets, déposent leur méchanceté habituelle, et oublient même leur colère devant les femmes. Les animaux femelles, au contraire, paraissent avoir des préférences pour les hommes. J'ai vu les taureaux les plus furieux, qui n'avaient pu être domptés ni par des chiens ni par des hommes, céder à une servante qui accourait le fouet à la main. D'un autre côté, j'eus beaucoup de peine, un jour, à sauver de la fureur d'une vache une dame avec laquelle je me promenais dans une prairie. Cette vache portait une haine indomptable aux femmes.

Peut-être, quelques-uns de mes lecteurs pensent-ils qu'on ne saurait admettre un organe de l'instinct de la propagation dans le cerveau, parce que chez beaucoup d'animaux l'activité de cet instinct est circonscrite à certaines périodes, et que chez eux, tantôt il semble ne pas exister du tout, et que tantôt il domine impérieusement l'animal. Mais, dans beaucoup de cas, cette objection serait applicable aussi aux parties sexuelles ; et du reste, il y a beaucoup d'autres instincts qui dorment dans certaines saisons, et qui se réveillent dans d'autres ; cependant, comme je ne tarderai pas de le prouver, leur organe existe toujours dans le cerveau.

Ce phénomène peut même s'expliquer en faveur de l'idée que le cervelet est l'organe de l'instinct de la propagation. J'ai rassemblé beaucoup de têtes d'oiseaux, au commencement du printemps, saison de leurs amours les plus ardentes ; j'en ai rassemblé d'autres au commencement de l'hiver, époque, où tout ce qui a rapport à la propagation est épuisé. Dans les têtes rassemblées au printemps, le cervelet est plus large et plus turgescant ; dans les crânes, la proéminence qui y correspond, est manifestement plus large et plus bombée que dans ceux recueillis au commencement de l'hiver.

Au printemps, toutes les parties situées à l'entour de la nuque reçoivent en abondance l'afflus du sang et une turgescence nerveuse propre. Le gosier se développe, et, en général, ces parties sont, pendant tout le temps des amours, dans un état de surirritation. Chez les chameaux femelles, il se forme à cette époque une tumeur qui suppure ou laisse suinter pendant tout le temps du rut, une liqueur d'une odeur très forte. Tout ceci prouve que les testicules et les ovaires ne sont pas les seules parties qui, dans la période du repos de l'instinct de la propagation, diminuent, et qui, dans la saison des amours, reprennent plus de plénitude.

De tous ces phénomènes, je conclus qu'il existe une réaction réciproque entre le cervelet et les parties qui l'environnent immédiatement, ainsi qu'entre lui et les parties sexuelles elles-mêmes. En traitant de l'état de maladie, je fournirai, en faveur de cette assertion, des preuves plus convaincantes encore.

Voici encore une objection tirée du *Dictionnaire des Sciences Medicales*, t. xxxvii. p. 267 : "Pourquoi donc la protubérance affectée à tel sentiment ou à telle passion particulière, restant la même, y a-t-il tant et de si continuelles vicissitudes dans l'affection ou disposition sensitive correspondante ? Si l'amour physique ou l'appétit vénérien a son siège organique situé derrière la tête, pourquoi l'intermittence, les variations, les degrés d'énergie ou d'affaiblissement d'une telle passion, se proportionnent-ils toujours à l'état d'irritation ou d'action d'un foyer particulier de sensibilité, ou d'un appareil nerveux dont l'influence est assez connue ? Si c'est la prédominance d'un tel foyer, son excitation actuelle par le fluide séminal qui l'impressionne et l'irrite, qui détermine l'appétit et fait naître la passion physique de l'amour, pourquoi ne serait-ce pas là aussi qu'elle aurait son organe ou son siège propre ?"

Lorsque M. Delpit a fait imprimer cet article l'an 1819, mon *Traité sur l'instinct de la propagation* était déjà imprimé l'an 1818, et mes idées étaient connues

par mes leçons publiques et par tous les ouvrages de mes élèves. Pourquoi M. Delpit ne s'attache-t-il pas à reproduire toutes mes preuves et à les infirmer ou réfuter toutes les unes après les autres ? Ces Messieurs ont la prétention de détruire les preuves les plus nombreuses de tout genre par une seule remarque, quelque hasardée qu'elle soit. Cela s'appelle bien, comme s'exprime Cabanis sur les facultés des femmes, enlever, avec un talent facile, légèrement la superficie des objects. Les collaborateurs d'un dictionnaire ont pris l'obligation de transmettre à la postérité les connaissances de leur temps. Mais tous ceux qui ont parlé dans le *Dictionnaire des Sciences Médicales* soit sur l'anatomie, soit sur la physiologie du cerveau, se sont permis, souvent même avec mauvaise foi, les plus puériles inexactitudes. D'abord pourquoi M. Delpit, dit-il, si l'appétit vénérien a son siège organique situé *derrière la tête* ? Pourquoi ne dit-il pas avec nous *a son siège dans le cervelet* ? N'y aurait-il pas là tant soit peu de malice ? En second lieu, si M. Delpit et son comité s'étaient bien imbus de leur objet, ils auraient trouvé dans presque tous les traités sur cet instinct, que ses intermittences, ses variations, ses degrés d'énergie et d'affaiblissement ne se proportionnent nullement à l'irritation des parties sexuelles. Ils auraient trouvé que cet instinct est quelquefois très énergique, avant qu'il n'existe la moindre irritation dans les parties de la génération ; ils auraient trouvé que cet instinct est encore trop souvent très actif, quand les parties sexuelles ne se prêtent plus à aucune irritation vénérienne ; ils auraient trouvé que cet instinct existe quelquefois dans les castrats ou même dans des personnes mutilées ainsi par un défaut d'organisation primitive ; ils auraient encore trouvé que c'est beaucoup plus l'action cérébrale que l'excitation des parties sexuelles par le fluide séminal, qui détermine l'appétit vénérien. Enfin ils auraient senti que, pour s'immiscer avec quelque espoir de succès dans les discussions sur la haute physiologie, il faut au moins avoir quelque

idée de la différence qui existe entre un organe législateur, régulateur, et ses instrumens d'exécution.

Preuves, prises de l'état de maladie, en faveur de l'assertion que le cervelet est l'organe de l'instinct de la propagation.

Influence de la castration sur le cervelet.

On opère la castration, ou dans la première jeunesse, ou dans l'âge adulte.

Dans le premier cas, l'influence de cette opération, sur la constitution tout entière, sur les instincts, les penchans et les facultés, est plus générale et plus marqués que dans le second. L'animal mâle quelconque, tout comme l'homme, qui l'a subie, prend les formes féminines. Chez l'homme, la barbe ne pousse pas, le gosier ne se développe point, et, par cette raison, le sujet n'acquiert jamais une voix mâle, etc. Voilà des phénomènes que tout le monde connaît; mais on n'a point fait attention au plus essentiel de tous, qui est le défaut de développement du cervelet.

Le cervelet est arrêté dans son développement, et n'acquiert pas, à beaucoup près, les dimensions auxquelles il fût parvenu, si la castration n'avait pas été entreprise. Si l'on examine dans les crânes de hommes et d'animaux, châtrés jeunes, la place du cervelet, elle paraît comme *ratatinée*; elle est beaucoup moins large et moins profonde; même les os crâniens immédiatement contigus, sont plus épais, moins transparens et plus raboteux que dans les sujets non-châtrés. Que l'on compare (Pl. LVIII.) le crâne du chat coupé, fig. 5, avec le crâne du chat entier, fig. 2. Que l'on compare les crânes de lapins coupés, de moutons, de chevaux hongres, avec les crânes d'animaux mâles entiers de la même espèce. La différence frappe au premier coup-d'œil, et devient bien plus sensible encore lorsque l'on mesure les cavités qui renferment le cervelet, les fosses occipitales dans toutes leurs dimensions.

C'est de ce défaut de développement du cervelet, et point du tout de la moindre saillie des muscles, qu'il résulte, comme je l'ai prouvé dans la section de l'influence du cerveau sur la forme du crâne, que tous les animaux coupés ont une nuque moins large et plus grêle que les animaux entiers, tels que le béliet, le taureau, etc. Cette différence est très marquée, même chez le coq et le chapon, quoique dans cette espèce le cervelet soit placé dans le milieu de la partie postérieure du crâne. Voy. (Pl. LVII.) le crâne du chapon, fig. 3, et celui du coq, fig. 1.

Ce développement imparfait du cervelet est aussi la seule cause pour laquelle l'instinct de la propagation ne se manifeste pas, ou se manifeste d'une manière très imparfaite. Si Boileau n'avait pas été privé de la virilité par le coup de bec qu'un coq-d'Inde lui donna dans son enfance, il n'eût certainement pas épanché sa bile castique sur le beau sexe ; et la cruauté avec laquelle les eunuques, à ce que l'on dit, traitent les femmes, prendrait du moins une autre direction, si l'on n'avait pas, dès leur enfance, arrêté le développement de leur cervelet.

Lorsque la castration a lieu après la fin de la croissance, ou du moins à une époque où le cervelet est en grande partie développé, elle n'empêche ni la manifestation de l'instinct de la propagation, ni ne détruit la faculté d'exercer le coït. Preuve certaine que l'instinct de la propagation dépend d'autres conditions que de l'existence des parties génitales, et de la liqueur séminale.

Quelques physiologistes qui déduisent l'instinct de la propagation d'une propriété irritante de la liqueur prolifique, soutiennent que chez les châtrés la semence reste dans le sang, et que c'est là ce qui explique tous les phénomènes qui ont lieu encore chez les eunuques.

Cette explication suppose qu'il peut exister dans le sang une véritable liqueur spermatique qui n'aurait pas été sécrétée par les testicules, reçue dans les vésicules séminales, et absorbée de là ; mais cette hypo-

thèse est en contradiction avec les principes de l'anatomie et de la physiologie. Dans la manière de voir de ces physiologistes, la liqueur séminale existerait également dans les alimens. Et pourquoi donc n'en existerait-il pas dans le sang des animaux qui ont été coupés dans un âge tendre, dans le sang des femelles et des femmes ?

Pour se tirer d'embarras, ils ont recours à la liqueur des prostates ; c'est elle qui, à les en croire, produit chez les eunuques, non-seulement l'instinct de la propagation, mais qui les rend encore propres à en exercer l'acte.

Mais on sait que la sécrétion de cette liqueur a encore lieu chez des sujets décrépits, et qu'elle n'existe pas du tout chez les enfans, qui cependant ont de fréquentes érections.

Il paraît pourtant que les suites de la castration ne sont pas les mêmes chez tous les sujets. Chez quelques-uns, les poils de la barbe tombent pour ne plus repousser ; le gosier qui était déjà développé, se contracte de nouveau, et la voix redevient celle d'un garçon impubère. Dans ce cas, et je suis tenté de dire dans tous les cas, l'influence de l'opération finit par se manifester sur le cervelet. Il ne diminue pas toujours au point de devenir aussi petit que si son développement avait été empêché dans l'enfance ; mais il se rapetisse et s'aplatit considérablement ; les bosses occipitales aussi, qui déjà étaient très bombées s'aplatissent, et l'intervalle entre les procès mastoïdiens se resserre. Ces changemens sont suivis de plus de calme du tempérament, et enfin de l'impuissance.

Ainsi donc, l'observation faite sur les eunuques, prouve que l'instinct vénérien ne dépend point des parties génitales, mais du cervelet.

Tout cela n'empêche pas M. Richerand de dire :

“Le cranoscope fait, du cervelet, l'organe de l'amour physique, c'est-à-dire qu'il y loge la faculté génératrice : c'est en vain qu'on lui objectera que le

cervelet des eunuques est aussi volumineux que celui des autres hommes; que l'amputation des organes génitaux, faite de bonne heure, éteint les désirs amoureux, sans empêcher pour cela le cervelet de s'accroître; qu'il est très difficile, pour ne pas dire impossible, de juger sur une tête entière, et non dépouillée de ses chairs, de la saillie plus ou moins forte des bosses occipitales inférieures, correspondantes au cervelet; que les blessures de cette région, comme toutes celles de la moelle de l'épine, doivent diminuer la faculté génératrice, de même qu'elles affaiblissent toutes les autres facultés; que les médecins de cet évêque d'Allemagne, atteint d'une folie amoureuse, dont il raconte l'histoire dans ses leçons, le guérissent par la castration, et non en lui faisant une blessure à la nuque; que ce n'était point par l'effet d'une plaie du cervelet que les Scythes, dont parle Hippocrate dans son immortel ouvrage, *de l'air, des eaux et des lieux*, devenaient inhabiles à la génération, qu'en général les animaux ont le cervelet plus volumineux que l'homme, quoique le plus grande nombre soit privé de la faculté de faire l'amour en tout temps, et présente moins de salacité.....
.....M. Gall ne tient aucun compte de toutes ces observations, et poursuit sa carrière sans daigner y répondre.

“ Tel un ânon broute l'herbe naissante,
Malgré les cris du maître et des servantes.” *

Après ce qui a été dit jusqu'ici, je peux me contenter de faire remarquer qu'il est absolument faux de dire que les animaux ont, en général, le cervelet plus grand que l'homme. Le bœuf, le cheval, l'âne, le cochon, et une infinité d'autres, l'ont manifestement bien plus petit. Il n'y a que l'éléphant et les grands mammifères aquatiques qui l'aient plus grand.

* *Des Erreurs populaires relatives à la médecine*, seconde édition, p. 265.

Influence de la castration unilatérale sur le cervelet.

De tous les faits qui prouvent que le cervelet est l'organe de l'amour physique, l'effet produit par l'ablation d'un seul testicule est, sans contredit, le plus péremptoire.

Toutes les fois qu'on a enlevé un seul testicule à un animal, de quelque espèce qu'il soit, le lobe du cervelet, du côté opposé s'atrophie visiblement, ou est altéré dans sa substance d'une manière quelconque.

M. Dannecy m'a communiqué le fait suivant, qu'il a observé lui-même à l'hospice de l'Ecole de Médecine, en présence de M. Patrix, chirurgien en second de l'établissement, et de plusieurs élèves : il est consigné sous le n°. 108 (15 juillet 1817,) dans le cahier d'annotations pathologiques de l'hospice. Dans l'autopsie de Jean-Michel Brigaud, mort le 14 juillet 1817, après avoir été opéré d'un sarcocèle, du côté droit, le 30 décembre 1815, on remarqua ce qui suit : Le cerveau et le cervelet étaient couverts d'une couche légère, d'une substance blanche albumineuse transparente. Le lobe gauche du cervelet était beaucoup plus mou et plus flasque que le lobe droit. Ses circonvolutions, ou plis, paraissaient aussi plus affaîssés du même côté. Chacun de ces lobes ayant été ouvert exactement à six lignes de la partie latérale correspondante à la moelle allongée, on a été surpris de voir combien la proportion de la matière blanche et de la matière grise était supérieure dans le lobe droit : la différence, en plus, a été estimée à plus d'un tiers ; aussi la développement intérieur du crâne correspondait à cette différence.

M. le baron Larrey m'envoya un soldat qui, dans l'opération d'une hernie, avait perdu le testicule droit. Plusieurs années après, son œil droit s'affaiblit, il commença à loucher de l'œil malade, et ne pouvait presque plus distinguer les objets de cet œil. J'examinai sa nuque en présence des deux médecins qui me l'avaient amené, et j'y trouvai la bosse occipitale, du côté

gauche, beaucoup moins saillante que celle du côté droit ; la différence était tellement sensible, que les deux médecins en furent frappés au premier coup-d'œil.

J'ai fait châtrer unilatéralement, plusieurs lapins, les uns du côté droit, les autres du côté gauche. Les ayant fait tuer six à huit mois après, j'ai trouvé, sans exception, le lobe du cervelet, du côté opposé à celui où la castration avait été opérée, plus petit, et la bosse occipitale plus aplatie que l'autre.

Je connais, il est vrai, un homme qui a perdu un testicule, il y a quatre ans ; et à l'heure qu'il est, on ne remarque aucune différence entre ses bosses occipitales ; mais ce fait ne prouve rien contre ce que j'ai avancé plus haut, car le changement peut exister dans l'intérieur, sans être, jusqu'ici, devenu sensible au dehors.

*Influence de la lésion des parties sexuelles sur le
cervelet.*

Depuis long-temps, les chasseurs ont observé que les lésions des testicules ont, chez les chevreuils et les cerfs, une influence remarquable sur le bois. L'animal ne le jette plus, et il se déforme de différentes manières ; il y naît des excroissances fongueuses, ou en choux-fleur. Nous vîmes, à Marbourg, une collection considérable de bois ainsi déformés. Tout le monde connaît la différence des cornes des bœufs, avec celles des taureaux.

D'après quelles lois ces phénomènes ont-ils lieu ? C'est là une question qui peut donner lieu à des opinions très divergentes. En conséquence de ce que j'ai dit plus haut, en parlant de l'influence du cerveau sur le crâne, dans l'état de maladie, je soutiens que dans tous ces cas, il s'opère d'abord un changement dans le cervelet ; qu'il y a dans cette partie diminution de la plénitude nerveuse. J'ai prouvé, dans la même sec-

tion, en alléguant des faits nombreux, que la substance osseuse du crâne devient ou plus dense ou plus épaisse, toutes les fois que le cerveau a commencé à diminuer, soit par suite d'une longue maladie cérébrale, soit par suite de la vieillesse. Ce n'est que de cette manière que l'on peut concevoir, après la lésion des testicules, l'excessive croissance du bois, comme une suite de la diminution du cervelet, produite par ces lésions.

Une autre observation, faite également sur les cerfs, paraît constater l'influence réciproque du cervelet et du bois. Lorsqu'immédiatement avant l'époque du rut, on scie le bois tout près de la couronne, la saillie du cerf devient inféconde. Cependant on dit qu'un daim, qui était abondamment nourri dans un parc, a fait exception à cette règle.

J'en viens maintenant à des faits que j'ai observés sur l'homme même, et qui ne laissent aucun doute sur l'influence nuisible des lésions des testicules sur le cervelet.

Un homme de trente ans s'était froissé le testicule gauche, à l'âge d'à-peu-près vingt-quatre ans; peu à peu, ce testicule s'était atrophié, et avait pris la consistance d'une petite pelotte de coton. Après avoir suivi mes leçons, il fut curieux de savoir si cet accident avait eu quelque influence sur son cervelet; et il ne tarda pas de s'apercevoir que sa bosse occipitale droite, était beaucoup moins bombée que la gauche. J'ai moi-même examiné soigneusement ce sujet, et j'ai trouvé parfaitement confirmées, tant l'atrophie du testicule gauche, que celle du côté droit du cervelet.

Peu après, un domestique vint me trouver, et se plaignit à moi d'être depuis quelque temps beaucoup plus indifférent pour les femmes qu'à son ordinaire, indifférence qu'il attribuait à un coup qu'il avait reçu aux testicules quelques années auparavant. Chez lui aussi je trouvai le testicule gauche presque entièrement atrophié; de suite je portai la main à sa nuque, et je sentis que la bosse occipitale droite était entièrement aplatie; la gauche, au contraire, était assez bombée.

Par hasard, l'un de mes auditeurs se trouvait dans ma maison ; je le fis entrer sans lui dire un seul mot. Dès qu'il eut examiné la nuque du domestique, il lui demanda s'il avait un testicule plus petit que l'autre : question qui jeta cet homme dans un grand étonnement. Voilà donc deux cas d'atrophie du lobe du cervelet, du côté opposé à celui où il y a eu lésion d'un testicule. Je rapporterai encore quelques observations qui nous autorisent à conclure que les fibres médullaires, remontant des parties génitales le long de la moelle épinière jusqu'au cervelet, s'entrecroisent avec les fibres médullaires de cette partie, tout comme une grande partie de la moelle allongée s'entrecroise avec une grande partie du cerveau.*

M. le baron Larrey m'envoya un soldat âgé de trente ans qui, il y a neuf ans, s'était froissé les testicules contre la palette de la selle, à la suite de quoi ils s'étaient enflés, et étaient devenus très douloureux ; peu de temps après, ils commencèrent à s'atrophier de manière qu'il n'en resta plus que de petites pelottes membraneuses. Les bosses occipitales sont étroites, renfoncées et raboteuses ; il ne sont pas la moindre irritation dans son flasque membre viril, et les femmes lui sont maintenant tout-à-fait indifférentes, quoique autrefois il y fût très adonné.

Les faits suivans consignés dans les cahiers d'anatomie pathologique de l'Hôtel-Dieu, m'ont été communiqués par M. Rousseau, chargé de la rédaction de ce recueil.

Le nommé Florat, âgé d'environ soixante ans, mourut le 19 mars 1818, d'un cystite avec inflammation et suppuration de la prostate. Le testicule gauche avait un volume un peu moindre que le droit ; l'épididyme gauche était gonflé, endurci, et contenait un peu de pus ; le lobe droit du cervelet était moins considérable que le gauche.

* En opposition avec ce que nous avons dit, vol. 1.

Une femme mourut d'une péritonite aiguë, qui avait été précédée d'un hydropisie de l'ovaire droit, et ensuite d'une ascite ; on avait procédé plusieurs fois à la ponction. A l'autopsie, on trouva l'ovaire converti en trois vastes kystes remplis de sérosité : le lobe gauche du cervelet était sensiblement atrophié.

Chez un autre femme, morte le 11 novembre 1818, on trouva à l'autopsie cadavérique, dans l'ovaire droit, un kyste contenant environ une cuillerée à café de sérosité limpide ; l'ovaire gauche était sain. Le cerveau n'offrait rien de remarquable, mais le lobe gauche du cervelet était d'un tiers environ plus petit que le droit.

Un jeune homme de vingt-un ans, grand, d'une constitution sèche, entra à la Charité dans la première quinzaine du mois d'août 1822. Il avait l'air hébété, parlait à peine, et se plaignait d'une douleur profonde et continue à la partie postérieure de la tête du côté droit. Il avait les yeux saillans, et la peau de la figure ainsi que celle de tout le corps, sale, sèche et comme terreuse. Il restait couché sur le dos et se remuait difficilement, quoiqu'il ne fût paralysé ni du sentiment, ni du mouvement, mais sa sensibilité était fort obtuse. Depuis qu'il était malade il n'avait eu aucune érection. Le testicule droit était d'un volume ordinaire. Le côté gauche des bourses était plus volumineux ; il y avait un hydrocèle qui empêchait d'apprécier le volume du testicule de ce côté.

Ce malade mourut le 6 septembre, on l'ouvrit le 7. On trouva le lobe droit du cervelet plus gros que l'autre, et l'on voyait une saillie bien marquée à sa face supérieure. On incisa de côté sur cette saillie, et on trouva une tumeur rougeâtre, d'apparence charnue, au milieu de la substance médullaire qui offrait les changemens suivans : d'abord elle était plus large que celle du côté opposé ; sa couleur était d'un jaune clair ; elle avait une résistance assez grande, puisqu'on en soulevait une lame assez longue sans qu'elle se rompît ; on ne pouvait pas en faire autant sur celle du lobe

gauche. J'ai dit une lame, parce que la portion de substance médullaire qui entourait immédiatement la tumeur avait l'aspect d'une membrane d'une demi-ligne d'épaisseur ; je crus même d'abord que c'était un kyste, mais elle se confondait presque partout avec la substance médullaire environnante ; en quelques points seulement on pouvait la séparer.

Sa verge était assez longue, très ridée, et le gland découvert.

Le testicule droit, comme je l'ai dit, était de volume ordinaire ; il y avait du côté gauche un hydrocèle de volume médiocre, et le testicule de ce côté était plus mou et un peu moins volumineux que l'autre.

Ces observations confirment l'idée que, dans l'état de santé aussi, le cervelet doit diminuer chez les mammifères et les oiseaux, toutes les fois qu'après le temps de la chaleur les testicules diminuent.

Influence des lésions du cervelet sur les parties génitales.

Hippocrate dit des Scythes : “Lorsqu'ils se sentent malades, ils s'ouvrent une veine derrière chaque oreille ; lorsque le sang en a coulé, ils se trouvent assoupis de faiblesse, et s'endorment ; au réveil quelques uns se trouvent guéris, mais il n'en est pas ainsi de tous. Pour moi, je pense que cette méthode curative leur est très pernicieuse, car il y a derrière les oreilles des veines dont la section entraîne l'impuissance, et c'est précisément à celles-là, je crois, qu'ils se saignent ; car lorsqu'après ils s'approchent de leurs femmes, il se trouvent dans l'impossibilité d'exercer le coït.” *

Alcméon regardait aussi la liqueur séminale comme une partie constituante du cerveau. Cette opinion paraît avoir été assez généralement adoptée dans l'antiquité.

* Hipp. de aere, locis et aquis, no. 20, edit. a Foës.

On trouve dans les *Mémoires de Brantôme, contenant les vies des hommes illustres et grands capitaines de son temps*, le passage qui suit : “ M. de Burie mourut sans lignée, et n’en eut jamais. Sa femme qui était naïve et libre, disait qu’il n’avait pas tenu à lui ni à elle, car ils en avaient bien fait le devoir pour en avoir, mais que son mari avait eu autrefois, aux guerres, un coup d’épée ou de masse d’arme sur la nuque du cou qui lui empêchait le conduit de la semence, si bien que la vraie crème ne pouvait ni passer, ni couler, sinon quelque petite espèce d’eau claire dans sa matrice, qui ne servait nullement pour engendrer ni concevoir.*

A Vienne, je fus consulté par deux officiers devenus impuissans à la suite de coups de feu qui leur avaient rasé la nuque. L’un d’eux recouvra peu à peu la faculté génératrice, se maria, et fut père de plusieurs enfans. A cette époque, je n’étais pas encore attentif aux changemens que subit la nuque elle-même après de semblables lésions.

A Berlin, M. le docteur Formey nous parla d’un homme qui, à la suite d’une blessure à la nuque, eut d’abord des érections désordonnées, après quoi il tomba dans une impuissance complète ; il recouvra cependant la virilité après six mois. Dans ce cas, l’inflammation causée par la blessure, avait d’abord produit une irritation dans le cervelet ; cette irritation fut suivie de faiblesse, comme le sont d’ordinaire toutes les inflammations et toutes les surirritations ; de-là d’abord impuissance, et puis retour des forces, retour de la virilité.

Un cocher qui jusque-là avait été un vaillant champion au champ d’amour, se frappa la nuque contre une poutre ; depuis cet accident, sa femme se plaignit à moi de ce que les forces de son mari s’éteignaient davantage de jour en jour, et de ce qu’il était devenu complètement nul. M. le baron Larrey a trouvé la

* Edition in-12, Londres, 1739, t. II, p. 182.

remarque qu'Hippocrate fait sur les Scythes, confirmée chez les Egyptiens : ils s'appliquent fréquemment des ventouses dans la nuque, et des observations multipliées ont convaincu M. Larrey que ces saignées souvent répétées, affaiblissent considérablement les soldats, sous le rapport de l'acte de la cohabitation.

Ce savant a eu la complaisance de me communiquer les faits qui suivent, relatifs à l'influence des lésions de la nuque sur l'instinct de la propagation.

Il m'a fait voir, avant son départ pour l'Espagne, un soldat de la garde impériale, jugé dans le cas de réforme, pour une faiblesse générale de tous les organes, et notamment pour la nullité d'action des parties génitales. Ce sujet avait été blessé à la nuque, par un éclat d'affût de canon, à la prise d'Alexandrie, lors de la descente de l'armée française en Egypte. Il était pour lors âgé de dix-huit ans. Après une suite d'accidens graves, qui accompagnèrent cette blessure, et pour lesquels il resta à l'hôpital l'espace de trois ou quatre mois, ses parties génitales tombèrent dans un état d'atrophie, et il perdit avec leurs fonctions physiques, l'érection du membre viril, et le désir de voir des femmes. Ce jeune homme est resté imberbe, frêle, décoloré, faible, languissant, et parlant comme une femme. Il était parvenu à l'âge de trente-deux ans, lorsqu'il a été réformé, et il ne paraissait en avoir que dix-huit.

Un autre garde impérial, du corps des chasseurs à cheval, s'est présenté à M. Larrey, avec une cicatrice qui coup transversalement la bosse occipitale, résultat d'un coup de sabre qu'il a reçu à la bataille de Wagram. Jusqu'alors ce chasseur avait fréquenté les femmes comme tous ses camarades. Depuis ce moment, il a été privé non seulement de tout érection, mais encore il a perdu tout désir.

Auguste François, maréchal-des-logis des cannonniers à cheval de la garde, reçut, au combat de Ben-evente, un coup de balle de mousquet qui traversa, d'un côté, à l'autre, les attaches des muscles exten-

seures de la tête, en effleurant les bosses occipitales inférieurs, très saillantes chez ce sujet, lesquelles furent dénudées des attaches aponévrotiques. M. Larrey brida les deux ouvertures produites par la balle, et il retira une portion de la chemise de ce canonnier, restée dans le trajet de la plaie que l'on pansa avec les émolliens. Le blessé éprouva d'abord des douleurs vives à l'occiput, de la pesanteur, et un engourdissement dans les membres inférieurs; la vue et l'ouïe s'affaiblirent au point qu'il pouvait à peine distinguer les gros objets, et entendre les sons les plus aigus. Les testicules se réduisirent, et tombèrent dans un état d'atrophie; le membre viril se flétrit aussi, et resta sans action. Cependant les plaies se détergèrent; les accidens locaux se dissipèrent, et le blessé se trouva guéri avant le cinquantième jour.

René Bigot, chasseur à cheval, d'une forte constitution, et très passionné pour les femmes, avait reçu, au même combat de Benevente, un coup de sabre qui avait coupé la peau et toute la portion convexe ou saillante de l'occipital jusqu'à la dure-mère, dont une portion avait été entamée. On voyait le lobe droit du cervelet à travers l'ouverture de la dure-mère. Le plus léger attouchement sur cet organe causait des vertiges, des syncopes et des mouvemens convulsifs, sans qu'il donnât le moindre signe de douleur. M. Larrey détacha la portion osseuse de l'occipital, laquelle était restée adhérente au lambeau qu'il appliqua doucement sur l'excavation du crâne, ayant eu soin de faire une incision à la base de ce lambeau pour favoriser l'issue des fluides. La portion correspondante à l'ouverture de la dure-mère, ne contracta point d'adhérence, à cause d'un suintement qui n'avait cessé de se faire de l'intérieur du crâne, où d'ailleurs il n'y avait point d'épanchement. Ces fluides sortaient, à chaque pansement, par petites bulles qui produisaient un léger sifflement, que l'on attribua à l'air extérieur qui entraît et sortait par la même ouverture.

Dès les premiers jours, le blessé perdit la vue et

l'ouïe du côté droit. Il éprouvait, en même temps, des douleurs vives sur le trajet de l'épine dorsale, et une sorte de fourmillement dans les testicules qui diminuèrent sensiblement, et furent réduits, surtout celui du côté gauche, au volume d'une fève de marais en moins de quinze jours. Bientôt après il perdit l'idée ou le souvenir des jouissances qu'il avait goûtées auprès d'un grand nombre de femmes.

Il avait très bien supporté le voyage de Benevente à Valladolid. D'ailleurs la plaie était en fort bon état, et donnait des espérances de guérison, si l'on excepte que les fonctions de la vue, de l'ouïe et de la génération paraissaient abolies pour toujours, lorsque des symptômes d'inflammation se déclarèrent et allèrent en augmentant progressivement, malgré les moyens qu'employa M. Larrey pour les combattre. Les douleurs de la tête et de l'épine faisaient jeter au malade des cris lugubres. Il était constamment couché dans son lit, sur le côté droit. Le moindre mouvement lui donnait des convulsions, et lorsqu'il se levait pour prendre du bouillon ou quelque médicament, il tombait dans des syncopes effrayantes.

M. Larrey fit appliquer un large vésicatoire à la tête ; il prescrivit les boissons rafraîchissantes, et tout ce qui était indiqué ; mais le mal empira de plus en plus, et le blessé mourut dans un état tétanique, le 7 février 1809, trente-huit jours après l'accident arrivé le 29 décembre 1808.

L'autopsie cadavérique fit reconnaître les symptômes suivans : il y avait eu une grande déperdition de substance à l'occipital ; l'ouverture dont nous avons parlé à la partie de la dure-mère, correspondante au lobe droit du cervelet qui était affaissé, était de couleur jaunâtre, sans suppuration ni épanchement ; les moelles allongée et épinière étaient d'un blanc terne, d'une consistance plus ferme que dans l'état naturel, et réduites d'un quart de leur volume ; les nerfs qui en émanent parurent également atrophiés.

Baptiste Vallet, âgé de quarante ans, d'une constitution athlétique, soldat au 5^e. régiment d'infanterie de la garde, entre à l'hôpital du Gros-Caillou le 28 août 1821, atteint d'hémiplégie complète de tout le côté droit du corps; le membre supérieur ne conservait aucun mouvement et était privé de sa sensibilité. L'inférieur pouvait encore un peu servir à la marche, quoique d'une manière pénible. Cette hémiplégie reconnaissait pour cause une chute faite de cinq pieds de haut, il y avait environ un mois, sur la partie latérale gauche et antérieure de la tête. La céphalalgie, premier résultat de cette chute, avait pris en quelques jours une telle intensité que Vallet avait été contraint d'entrer à cette époque à l'hôpital, et avait été placé dans les salles des fiévreux. Des bains de jambes sinapisés, une saignée, six sangsues aux tempes, un vésicatoire au bras droit, avaient été les moyens mis en usage. La céphalalgie avait en effet cédé à l'influence de ces moyens; l'hémiplégie, qui ne commençait que de se développer, ne fut point combattue. D'ailleurs le malade était sorti quinze jours après son entrée, dans l'espérance que la marche, l'exercice, un air plus pur, pouvaient lui être favorables. Cet espoir ayant été déçu, car à l'hémiplégie qui s'était prononcée de plus en plus, il s'était joint un trouble et une faiblesse notables dans la vue de l'œil droit, un commencement de paralysie dans la langue, et une difficulté assez grande dans la prononciation; Vallet rentra alors, comme nous l'avons indiqué, le 28 août, et fut placé dans les salles des blessés.

M. le baron Larrey, après un examen attentif de ce sujet, reconnut une exubérance contre nature dans la région latérale gauche et supérieure du crâne. Quelques questions faites au malade, relatives aux causes de ces phénomènes, amenèrent Vallet à parler de sa chute. Dès-lors M. Larrey reconnut facilement que tous les accidens que le malade avait présentés et présentait encore, étaient dus à la commotion du cerveau et à l'altération des os du crâne, des méninges, et sans

doute de la masse encéphalique. Il se détermina en conséquence à attaquer le mal à sa source même. Après avoir fait désemplir les vaisseaux cérébraux au moyen d'une saignée à la veine jugulaire, il fit raser entièrement la tête et appliquer un large vésicatoire sur tout le côté gauche de cette partie. Quatre jours après, Vallet allait déjà mieux; les doigts avaient repris quelques-uns de leurs mouvemens, l'avant-bras commençait à se fléchir sur le bras. Un second et un troisième vésicatoires appliqués à quelque distance d'intervalle, une huitaine de jours, entretenaient ce mieux sensible; quelques pillules de calomel, une potion de valériane pour la nuit, des frictions d'huile de camomille camphrée sur les membres paralysés, étaient les autres moyens qu'on employait. Le 17 septembre, un premier moxa fut appliqué sur les parties latérales et supérieures du cou, et quelques jours plus tard on établit deux exutoires au moyen de la potasse, un de chaque côté de la base du crâne, entre les apophyses mastoïdes et les bosses occipitales supérieures. Les mouvemens des extrémités furent alors à moitié rétablis, le malade pouvait se lever, marcher librement et prendre tout l'exercice nécessaire au maintien de cette amélioration. La parole restait encore un peu embarrassée; les mots où se recontraint desir, étaient ceux qu'il prononçait le plus parfaitement et qu'il choisissait pour ainsi dire instinctivement. Déjà chez plusieurs autres malades atteints d'affections cérébrales de cette nature, nous avons remarqué ce choix de mots et cette plus grande facilité à les prononcer. Plusieurs autres moxas, au nombre de dix ou douze, ont été appliqués successivement et à des distances convenables sur le trajet des branches du nerf facial et des paires cervicales qui vont former le plexus brachial droit, pour achever la guérison. Elle eut lieu en effet vers le commencement de novembre, mais elle n'était point encore assez consolidée pour qu'on ne craignît pas le retour de l'hémiplégie. Néanmoins Vallet qui était d'un caractère

obstiné, et chez qui d'ailleurs l'intellect était peu développé, content de sa situation présente, ne voulut pas continuer à supporter l'application de nouveaux moxas, et se livra à l'intempérance ; quelques jours après, il fut puni de son entêtement et de son inexactitude à suivre le régime prescrit ; la paralysie revint accompagnée d'un embarras gastrique. On fit de nouveau raser la tête et appliquer un large vésicatoire ; une potion avec l'huile de ricin fut administrée, un scrupule d'acétate d'ammoniaque fut ajouté dans une potion anti-spasmodique, de nouveaux moxas furent appliqués à la base du crâne du côté opposé à la paralysie et sur les paires cervicales du même côté. Cette rechute fut encore combattue avec succès par ces moyens, et la force étant tout-à-fait revenue dans les extrémités droites, le malade sortit enfin le 19 octobre, parfaitement guéri.

Quatre mois après, nous apprîmes que Vallet, rentré depuis quelque temps à l'hôpital dans la division des fiévreux, pour une affection catharrale avec céphalalgie et adynamie générale, y était mort le 7 février. Le lendemain on fit l'ouverture de son corps.

Le crâne scié circulairement et enlevé avec précaution, nous observâmes que le côté gauche de cette voûte était moins profond que le droit. La surface de la dure-mère légèrement injectée et d'une teinte jaunâtre offrait les traces d'une inflammation chronique. L'arachnoïde était saine ; soulevée à l'aide d'un chalumeau, on distinguait très bien que cette membrane n'était nullement enflammée ; ce qu'on aurait pu croire sans cette précaution, car à la première vue on voyait une injection très belle, une inflammation très prononcée, mais qui appartenaient l'une et l'autre à la pie-mère et non à l'archnoïde, dont la présence semblait disparaître sous une teinte aussi rouge. Tous les principaux vaisseaux étaient très distendus et gorgés de sang noirâtre. En soulevant le cerveau de la base du crâne, on aperçut le nerf optique droite plus gros, plus dense que le gauche ; il était aussi d'une couleur

rougeâtre ; un tubercule stéatomateux en suppuration entourait l'artère basilaire avant sa bifurcation, et rendait son diamètre plus petit. Ce tubercule avait même contracté un point d'adhérence sur le pont de varole. Toute la substance médullaire du cerveau, principalement de l'hémisphère gauche, était engorgée, d'une consistance plus ferme et d'un aspect plus gris que l'état naturel. L'hémisphère droit se rapprochait davantage de cet état par sa mollesse et sa blancheur. Dans la protubérance annulaire même, le côté gauche était également plus dense que le droit, il ne cédait que très difficilement à de forts degrés de pression. Les circonvolutions du cerveau étaient aussi plus profondes et plus minces à gauche.

Quand on eût achevé l'examen du cerveau et qu'on porta ses regards sur la base du crâne, on fut frappé de l'extrême différence que présentaient les fosses moyennes ; la droite était presque de moitié plus large que la gauche ; les fosses antérieures avaient une différence bien moins prononcée. Quant aux fosses postérieures, celles qui logent le cervelet, leur petitesse et leur peu de profondeur excitèrent l'étonnement ; elles engagèrent à remarquer le cervelet et les organes génitaux pour voir quels rapports existaient entre eux. Les deux lobes du cervelet, d'une égale forme, étaient en effet de la moitié moins volumineux qu'on ne l'observe ordinairement chez un sujet de la même grandeur, et les testicules réduits au volume d'une fève de haricot, n'offraient presque aucune consistance. Le pénis n'avait que six lignes de longueur. (La tête de Vallet qu'on prépare en ce moment, sera remise à M. le docteur Gall.)

La cavité thorachique nous a aussi présenté des phénomènes intéressans et analogues à ceux des os du crâne. La cavité droite était beaucoup plus petite que la gauche ; le poumon de ce côté était très petit, adhérent aux deux côtés et dans un état d'inflammation récente ; le foie, très volumineux, montait dans cette cavité et avait dû contribuer encore à rapetisser

le poumon de ce côté. Le droit au contraire était très ample, ainsi que la cavité qui le contient. Le cœur avait un volume ordinaire, les oreillettes étaient gorgées de sang. L'abdomen n'offrait aucun état d'altération.

M. le baron Larrey attribue la réduction osseuse qu'on a remarquée à l'influence, à l'action énergique des topiques révulsifs appliqués, et sur l'emploi desquels on a insisté le plus long-temps possible, puisqu'à l'entrée de Vallet à l'hôpital, cette partie gauche du crâne offrait au contraire une exubérance manifeste. Cette assertion a été d'ailleurs discutée et prouvée par cet habile praticien dans de semblables circonstances et dans d'autres affections cérébrales, l'épilepsie par exemple.

Le docteur Thouvenelle m'a communiqué un cas de blessure tout semblable, et qui eut les mêmes suites.

Je fais observer encore ici que chez Bigot, c'est surtout le testicule gauche qui s'atrophia, au point de se réduire aux dimensions d'une fève de marais, tandis que c'est l'hémisphère droit du cervelet qui avait été lésé. M. Larrey me fit voir des blessés semblables, dans l'hôpital de la garde, et me donna deux crânes dans lesquels la marque des coups de sabre sur les fosses occipitales atteste la lésion du cervelet ; chez tous ces sujets, il y avait eu atrophie et ramollissement des testicules.

Je vais rapporter encore un exemple fort remarquable, quoique je n'ose pas décider ce qui, dans ce cas, a souffert le premier, des testicules ou du cervelet. Un garçon de treize ans se livrait depuis quelque temps à l'onanisme avec tant de fureur, que tous les moyens que l'on employa pour le corriger de ce vice, furent infructueux ; enfin il fut attaqué d'une incontinence d'urine et de vomissemens très opiniâtres. Dès le commencement de sa maladie, il ne se traînait qu'à peine, et au bout de quelques mois il fut paralysé des extrémités inférieures, sa pupille perdit la faculté de se

contracter ; pendant long-temps il y voyait encore un peu vers l'angle interne des yeux, mais il finit par perdre complètement la vue ; des convulsions ne tardèrent pas à se manifester autour des yeux et de la bouche. La paralysie devint complète, les poumons mêmes perdirent leur action, et il mourut suffoqué. A l'autopsie je trouvai plus d'une livre d'eau limpide dans les cavités cérébrales. L'un et l'autre lobe du cervelet étaient remplis de pus à l'intérieur ; cependant la suppuration avait fait bien plus de ravages dans le lobe gauche que dans le droit. La commissure des deux lobes du cervelet (le pont), était singulièrement diminuée par l'atrophie, et d'une couleur jaunâtre. L'un et l'autre testicule étaient très petits ; celui du côté droit avait presque entièrement disparu, et était d'une consistance très molle : donc ici encore coïncidence entre la lésion des deux côtés opposés.

Il existait, dans la famille de ce jeune homme, une disposition héréditaire à l'hydropisie cérébrale. Je suis persuadé que l'eau trouvée dans les cavités encéphaliques n'était en liaison avec l'onanisme, qu'autant que sa présence avait augmenté l'irritabilité et la sensibilité de tout le système nerveux.

La suppuration du cervelet devait aussi être établie depuis long-temps, car le pus avait plutôt l'apparence d'un putrilage purulent, que d'un pus de bonne qualité. C'est donc une question de savoir si ce n'est pas l'état maladif du cervelet qui a entraîné à l'onanisme ce jeune homme, d'ailleurs fort raisonnable et très bien élevé. Faut-il admettre au contraire que c'est l'onanisme qui a causé la maladie du cervelet ? Quoi qu'il en soit, ce cas prouve l'influence que les parties génitales et le cervelet exercent réciproquement l'un sur l'autre.

De tout ce que je viens de dire, il résulte que les maladies et les lésions du cervelet ont, sur les parties génitales, une influence aussi bien prouvée que l'est l'influence des maladies et des lésions de ces dernières sur le premier : il paraîtrait même que la vie

du cervelet est plus indépendante que celle des parties génitales.

Influence des maladies du cervelet sur les parties génitales, et principalement sur l'instinct de la propagation. Manie érotique.

Je traiterai cette matière sous un double point de vue ; mon intention est, 1. de donner des preuves nouvelles en faveur de la connexion immédiate qui existe entre le cervelet et les parties sexuelles, ainsi que l'instinct de la propagation ; et 2. de mettre au jour la vraie cause et la véritable origine de la manie érotique.

Il est certaines maladies des parties génitales, qui bien qu'elles occasionnent une violente irritation dans ces organes, n'ont aucune influence sur l'instinct de la propagation. Les inflammations les plus violentes de ces parties provenant de causes extérieures, ne sont jamais accompagnées ni de manie, ni de désirs amoureux. Lorsqu'une acrimonie dartreuse se porte sur ces organes, soit chez des hommes, soit chez des femmes, elle y produit bien une chaleur brûlante et douloureuse, et une démangeaison insupportable, mais elle n'excite point de désirs. J'ai vu, dans les maladies du bas-ventre, par exemple du foie, des reins, les malades avoir, pendant des semaines entières, de violentes érections qui faisaient leur tourment, loin de provoquer le moindre désir amoureux.

M. Fodéré rapporte qu'à la suite d'une piqûre d'insecte, un homme eut de violentes érections, sans la moindre sensation voluptueuse.*

Aucune de ces observations ne peut être nouvelle pour les médecins expérimentés. Comment se fait-il donc qu'ils soutiennent presque tous, avec Cabanis, que les parties sexuelles sont souvent le siège de l'aliénation mentale ? †

* Sur le Délire, t. I, p. 316.

† Sur le rapport du physique et du moral, etc. t. I. p. 107.

Un jeune homme, robuste et plétorique, était arrivé depuis quelque temps à Vienne. Faute de liaisons, il vivait dans une plus grande continence que de coutume, et il tomba brusquement dans une manie érotique ; il avait des érections long-temps continuées ; ses testicules étaient enflés et douloureux. Qu'y avait-il de plus naturel, suivant les idées recues en médecine, que de chercher la cause de sa maladie dans l'inflammation des parties génitales ? Aussi employa-t-on tous les moyens pour combattre l'inflammation locale, et pour faire cesser la surirritation des organes générateurs : mais le malade n'en resta pas moins dans le même état pendant trois semaines. Lorsque je fus appelé, je rendis mes collègues attentifs à l'inflammation du cerveau, et surtout du cervelet. Nous concertâmes notre plan curatif ; en conséquence de cette idée, et en peu de jours, l'inflammation et l'enflure des parties sexuelles, ainsi que la manie, avaient disparu.

L'on peut admettre, sans balancer, que lorsqu'un état maladif des parties génitales est accompagné de manie, ces parties ne sont malades que secondairement ou par sympathie, et que le siège du mal est dans le cerveau, ou, si la manie est en particulier du genre érotique, dans le cervelet. Avant de prouver cette assertion par un tableau fidèle de la manie érotique, je ferai quelques observations sur l'origine de cette maladie.

Un jeune homme très bien élevé et rempli de talens, qui depuis son enfance s'était senti violemment entraîné aux idées érotiques, les maîtrisait jusqu'à un certain point, à l'aide de son penchant également décidé à la dévotion. Lorsque ses relations sociales lui eurent permis de se livrer sans contrainte aux plaisirs de l'amour, il ne tarda pas de s'apercevoir, avec une espèce d'effroi, que souvent il lui devenait très difficile de détourner son attention des images voluptueuses qui le poursuivaient, pour la porter sur les affaires importantes et souvent pressées de son état. Tout son être était absorbé par la sensualité. Pour ne

pas succomber tout-à-fait, il se trouvait forcé de s'occuper assidûment d'objets scientifiques, ou de se créer quelque nouvelle occupation favorite ; son cervelet est d'une grandeur peu ordinaire.

Une dame très spirituelle était tourmentée, également, depuis son enfance, par les désirs les plus désordonnés ; l'éducation très soignée qu'elle avait reçue, fut seule capable de la sauver des démarches les plus inconsidérées auxquelles la portait la violence de son tempérament. Lorsque dans un âge plus mûr, elle se trouva abandonnée à elle-même, elle essaya tout pour satisfaire ses désirs brûlans mais la jouissance ne paraissant que les irriter. Souvent elle se vit sur le point de tomber dans la manie. Réduite au désespoir, elle abandonna sa maison, quitta la ville, et se réfugia chez sa mère, dans une campagne isolée, où le défaut d'objets, la plus grande sévérité de mœurs, et les soins du jardinage, prévinrent l'éclat du mal. Après avoir habité de nouveau, pendant quelque temps, une grande ville, elle se trouva menacée d'une rechûte, et elle se réfugia une seconde fois auprès de sa mère. A son retour elle vint me trouver à Paris, et se plaignit à moi comme une femme au désespoir. Partout, me dit-elle, je ne vois que les images les plus lubriques ; le démon de la luxure me poursuit sans relâche en tous lieux, à table, dans mon sommeil même : je suis un objet de dégoût pour moi-même ; oui, je le sens, je le puis plus échapper à la manie ou à la mort.

Je lui fis, en abrégé, l'histoire naturelle de l'instinct de la propagation ; je la rendis attentive à la forme de sa nuque. Quoique sa tête soit très grande, le diamètre de sa nuque surpasse la distance d'une oreille à l'autre. Elle conçut la cause de son état ; je lui conseillai de continuer son voyage pour aller rejoindre sa mère, de varier ses occupations pour diminuer l'activité de son cervelet ; de se faire souvent appliquer des sangsues à la nuque, pour modérer l'état d'irritation de cet organe, d'éviter tous les mets échauffans et toutes les boissons irritantes, etc.

Une homme avait vécu plusieurs années dans un mariage très bien assorti, dont il était né plusieurs enfans, et il avait acquis, par son activité, une fortune honnête. Lorsqu'il se fut retiré des affaires, et qu'il mena une vie oisive, son penchant inné dominant gagna peu à peu le dessus. Il s'abandonna tellement à ses désirs, que jouissant encore de sa raison, il regardait toute femme comme une victime destinée à satisfaire sa sensualité. Du moment où il apercevait de la fenêtre une personne quelconque du sexe, il annonçait en toute hâte, et avec l'accent de la joie, à sa femme et à ses filles, le bonheur qui l'attendait. A la fin, cette manie partielle dégénéra en manie générale, et peu après il mourut dans l'hospice pour les aliénés de Vienne. Son crâne prouve que son cervelet avait acquis un développement très considérable, (Pl. XL. I. I. I. I.)

M. Pinel rapporte un exemple tout semblable : "Un homme, dit-il, avait rempli, avec éloge, jusqu'à sa cinquantième année, des fonctions publiques. Il s'excite alors une ardeur immodérée pour les plaisirs vénériens; son regard est vif et animé; il fréquente des lieux de débauche, se livre à tous les excès, et revient tour-à-tour dans la société de ses amis, leur peindre les charmes d'un amour pur et sans taches. Son égarement augmente par degrés, et on est obligé de le tenir enfermé. La solitude exalte son imagination fouguese; il peint en traits de feu les plaisirs qu'il a goûtés avec ce qu'il appelle des beautés célestes; il s'extasie en parlant de leurs grâces et de leurs vertus; il veut faire construire un temple à l'Amour, et se croit lui-même élevé au rang des dieux: ce furent-là les préludes d'une fureur violente avec délire."*

On voit, par ces exemples, que les personnes dont le cervelet a acquis un développement plus qu'ordinaire, ont une disposition naturelle à la manie érotique; mais ces exemples montrent aussi que l'extrême ac-

* De l'aliénation mentale, deuxième édition, page 15 et 16, § 18.

tivité de cet organe ne la produit réellement que dans le cas où les personnes chez qui cette disposition a lieu, se livrent exclusivement aux jouissances de l'amour physique ; tant il est sûr que les fréquentes jouissances ne sont point un remède contre cette espèce de manie.

Dans les hospices, nous avons trouvé constamment le cervelet très développé chez tous les sujets atteints de manie érotique, et chez tous ceux qui étant atteints d'une manie totale, se livraient irrésistiblement à l'onanisme.

M. Esquirol nous fit voir le plâtre d'une femme qui avait été atteinte de manie érotique. Les bosses occipitales très saillantes annoncent un cervelet extraordinairement développé.

Il en est cependant de cet organe comme de toutes les autres parties : non-seulement une activité excessive dont il est doué primitivement, peut dégénérer en manie, c'est-à-dire en une activité tellement forte, qu'elle n'est plus soumise à l'empire de la volonté ; mais d'autres causes encore peuvent exalter l'action du cervelet, au point qu'il en résulte une manie érotique, même chez des personnes qui, suivant la marche ordinaire de la nature, n'y étaient pas disposées.

Ne voit-on pas, dans des maladies aiguës, des sujets qui n'avaient auparavant aucune disposition à être méromanes ou querelleurs, faire des vers et chercher dispute à tout le monde ? Ces cas, il est vrai, sont fort rares, et toujours l'histoire de la vie antérieure du malade, jointe à la conformation de son cervelet, pourra donner l'explication du phénomène, et décider le médecin à avoir égard dans le choix de sa méthode curative, plus particulièrement aux causes accidentelles, ou à la disposition naturelle, à des dérangemens généraux, ou à un dérangement partiel.

Je place ici le tableau que fait M. Pinel de la manie érotique, tant parce qu'il confirme ce que j'ai dit jusqu'ici de cette maladie, que parce que M. Pinel lui-même, qui cependant ne paraît attribuer ce genre de manie qu'à une espèce d'effervescence qui aurait lieu

dans les parties sexuelles, est obligé d'en revenir à une disposition particulière.

“C'est dans l'un et l'autre sexe une effervescence physique des organes générateurs, avec les gestes les plus lascifs, et les propos les plus obscènes ; elle tient d'autant plus à la disposition intérieure, qu'elle ne dure qu'autant que la maladie ; et j'ai vu les personnes les plus recommandables par la pureté de leurs mœurs, éprouver, pendant un temps déterminé de leur état maniaque, ce rapprochement malheureux avec des femmes de débauche ; puis revenir, lors de leur convalescence, à leur caractère primitif de réserve et d'une extrême décence. J'ai vu cette affection se développer dans des cas extrêmes de la manière suivante ; d'abord gaîté insignifiante, regard animé, recherche voluptueuse dans la toilette, curiosité inquiète, tremblement des mains, douleurs sourdes à la matrice, chaleur brûlante dans l'intérieur des seins, mobilité extrême des yeux, impatience ; l'accès est alors à son plus haut degré ; babil rempli de mots sales et de propos obscènes, vociférations, gestes provocateurs, et mouvemens du corps les plus lascifs, tous les emportemens effrénés, et les illusions d'un délire érotique. Cette fougue impétueuse cède à une répression rendue nécessaire, et il succède un morne repos, ou plutôt un état de lassitude : la maigreur est alors extrême, et cette fureur interne amène l'épuisement, la stupeur et la démence ; l'embonpoint se rétablit par degrés. La maladie devient quelquefois périodique, et la vie se passe dans une alternative d'un égarement érotique, et de l'apathie la plus stupide.” *

Le tableau qu'on vient de lire, nous conduit naturellement à cet état d'irritation du cervelet, qui entraîne les maladies connues sous le nom de satyriasis, de priapisme et de nymphomanie. Quelque divers que puissent être les idées déréglées et les sentimens extravagans qui accompagnent ces maladies, ils ont

* De l'aliénation mentale, deuxième édition, p. 67, § 78.

toujours pour pivot l'instinct de la propagation, et ce genre d'aliénation doit être rangé, par conséquent, dans la classe de la manie érotique. Comme l'on cherchait uniquement la source de ce mal dans les parties sexuelles, l'on n'a indiqué, d'ordinaire, d'autre remède que la castration. Par cette mutilation, l'activité du cervelet se trouve affaiblie; et c'est pour cela que le mal diminue quelquefois après l'opération. Mais ce moyen n'a certainement pas toujours un effet utile; car dans les grandes maisons publiques de fous, comme l'a déjà remarqué Cabanis, on voit assez souvent ces malheureux s'arracher les testicules, sans qu'il résulte de-là le moindre changement dans l'état du cerveau. Je veux bien qu'à défaut de meilleure méthode curative l'on continue, dans ces cas, de couper les étalons; mais lorsque dans notre espèce il y a encore possibilité de guérison, on l'obtiendra certainement avec moins d'inconvéniens par une méthode curative dans laquelle on aurait uniquement égard à l'état du cerveau, et surtout du cervelet.

L'on parle beaucoup d'une manie, produite ou par une trop grande continence, ou par des émissions excessives de la liqueur séminale.

Une trop grande continence, supposé qu'elle ait lieu réellement, peut, sans contredit, occasionner des maladies inflammatoires, et surtout une inflammation et une surirritation du cervelet et du cerveau entier, et produire, par conséquent, la manie érotique aiguë, ou une manie générale.

Cabanis impute les accidens qui résultent d'une continence trop sévère, tantôt à l'état des organes de la génération, tantôt à un état maladif du cerveau. S'il avait connu l'influence réciproque du cervelet sur les parties sexuelles, et de celles-ci sur le cervelet et sur le cerveau, il n'aurait certainement pas hésité entre ces deux opinions. Les dispositions extraordinaires de l'esprit, les affections et les penchans singuliers, et les bizarreries qui surviennent chez les jeunes filles et les jeunes garçons mobiles et délicats,

quand les appétits nouveaux sont trop long-temps contrariés, auraient dû le mettre sur la voie. Et lorsqu'il dit que rien n'est moins rare que de voir des femmes acquérir, dans leurs accès de vapeurs, une pénétration, une élévation d'idées, une éloquence qu'elles n'avaient pas naturellement, ne devait-il pas, en bon logicien, se décider pour le cerveau ?

Il cite même, d'après Buffon, l'histoire célèbre d'un curé qui, par l'effet d'une chasteté rigoureuse, était tombé dans un délire vaporeux voisin de la manie. Pendant tout le temps que dura ce délire, le malade déploya divers talens qui n'avaient pas été cultivés en lui. Il faisait des vers et de la musique ; et, ce qui est encore bien plus remarquable, sans avoir jamais touché de crayon, il dessinait avec beaucoup de correction et de vérité les objets qui se présentaient à ses yeux. La nature le guérit par des moyens très simples. Mais quoiqu'il restât toujours homme d'esprit, il avait vu s'évanouir, avec sa maladie, une grande partie des facultés merveilleuses qu'elle avait fait éclore. Qui oserait faire dériver d'un état des parties de la génération la poésie, la musique et l'art du dessin ?

La maniaque dont parle M. Pinel, paraît avoir été dans le même cas.

“C'est quelquefois, dit-il, un excès opposé, c'est-à-dire, des penchans vivement irrités, et non satisfaits, qui peuvent aussi jeter dans un égarement complet de la raison. Une mélancolie tendre, et des inquiétudes vagues, dont l'objet n'était ni méconnu, ni dissimulé, distinguèrent à vingt ans une personne douée d'une constitution forte et d'une vive sensibilité ; tout concourait à enflammer son imagination : lecture assidue des romans les plus galans, sorte de passion pour toutes les productions des arts dans le genre érotique, fréquentation habituelle de jeunes gens des deux sexes, dont les uns la charment par des agrémens personnels et toute la séduction de la galanterie, les autres par des exemples dangereux et des confidences indiscrètes.

La coquetterie la plus raffinée est érigée alors en principe, et devient une occupation sérieuse, son orgueil, flatté des moindres prévenances, les lui fait regarder comme un triomphe assuré, dont elle ne cessait de s'entretenir ou de faire l'objet de ses rêveries, jusqu'à ce qu'une nouvelle aventure fit oublier la première. Une faute paraissait inévitable, ou du moins très à craindre, et les parens se hâtent de conclure un mariage fondé sur certaines convenances. L'époux choisi était d'un âge mûr, et malgré les avantages de sa stature et d'une complexion forte, peut être moins propre à satisfaire qu'à irriter ses désirs. La mélancolie de la jeune dame dégénère en une sombre jalousie, et elle attribue à des infidélités ce qui n'était que l'effet de la débilité des organes. Une sorte de dépérissement succède, les traits s'altèrent, et il se déclare un babil intarissable, avec le plus grand désordre dans les idées, prélude ou plutôt signe manifeste d'une manie déclarée."*

Mais il est bien rare, je crois, que la continence soit poussée au point de produire de pareils effets. La nature a tant de moyens de diminuer la trop grande abondance de la liqueur séminale, même sans le concours de l'individu, que ce genre d'aliénation ne doit être à craindre que très rarement. Croyez-en celui qui sonde les cœurs et les reins ; *il n'est pas bon que l'homme soit seul*. Souvent on articule comme cause d'une maladie, une continence excessive, lorsqu'on ne devrait en chercher la cause que dans une débauche secrète. Un évêque qui édifiait son diocèse par une vie exemplaire, tomba, vers sa soixantième année, dans une mélancolie accompagnée d'une faiblesse d'esprit manifeste. Tout le monde déplorait le malheur si peu mérité du saint homme ; il mit sa confiance en moi ; je sortais souvent avec lui, tant à pied qu'en voiture ; toutes les fois que nous rencontrions une jeune fille, il soupirait profondément ; aussi souvent qu'il

* Sur l'Aliénation mentale, deuxième édition, p. 47 et 48, § 58,

voyait un couple heureux, il me serrait la main avec chaleur, en s'écriant : "Quelle est leur félicité !" J'allai au-devant des aveux qu'il pouvait avoir à me faire : je l'entretins sur le ton de l'amitié, du bonheur que goûtent des époux dans un mariage bien assorti, de l'intention du Créateur empreinte dans toutes les œuvres de la création. Le voile tomba, et me laissa voir l'homme : le pieux évêque m'avoua qu'il était du nombre de ceux qui *pèchent sept fois par jour*.

Familiarisé avec les faiblesses humaines, je suis disposé bien plutôt à attribuer la manie érotique à des excès, qu'à une trop grande continence. Ces excès produisent une irritabilité et une excitabilité du cerveau telle, qu'il n'est plus au pouvoir de l'homme d'arrêter le torrent des idées lubriques et des images voluptueuses qui vient fondre sur lui. Mais comme la cause première agit avec d'autant plus de violence que les autres facultés de l'âme sont plus affaiblies, ce genre de manie dégénère bientôt en démence, et en faiblesse générale de tout le corps. Ici encore, je cite à l'appui de mon assertion un exemple rapporté par M. Pinel.

"Un jeune homme, d'une forte constitution, et né d'un père riche, avait atteint son accroissement complet vers la dix-huitième année de l'âge, et ce fut à cette époque de l'extrême effervescence de ses sens, qu'il commença à se livrer à ses penchans avec toute l'impétuosité d'un caractère ardent, et les facilités que lui donnait un rassemblement journalier de jeunes ouvrières dans une grande manufacture. Il prend alors l'habitude de s'adonner au plaisir sans frein et sans mesure, le plus souvent à diverses heures du jour et de la nuit ; il fait succéder, à l'âge de vingt ans, d'autres excès non moins destructeurs ; ceux de l'intempérance et de la fréquentation répétée des lieux de débauche. Des maux vénériens, tour-à-tour guéris et de nouveau contractés, viennent se joindre à l'épuisement, et se compliquer avec d'autres affections cutanées. Des objets de commerce rendent alors néces-

saires des voyages fréquens en chaise de poste, le jour, la nuit, et dans toutes les saisons de l'année. Les traitemens au mercure sont tour-à-tour commencés, suspendus, renouvelés, sans ordre et sans règle. Dés-lors les symptômes les plus marqués d'une hypochondrie la plus profonde; digestions laborieuses et très imparfaites; flatuosites incommodes, rapports acides, alternatives de resserrement ou de relâchement des intestins, douleurs vives de colique devenues périodiques: frayeurs sans cause, pusillanimité extrême, dégoût de la vie, et plusieurs tentatives de commettre un suicide. Une crédulité aveugle et puérile dans la vertu des médicamens, et une confiance entière accordée a toute espèce d'empiriques, se joignent déjà, à vingt-cinq ans, à la nullité entière pour un plaisir dont il a abusé à l'excès, et à une décadence de la raison qui ne fait que s'accroître." *

Tous les exemples cités jusqu'ici, prouvent qu'aucune espèce de manie érotique ne peut avoir son siège dans les parties génitales elles-mêmes; qu'il faut de toute nécessité chercher la cause de ce dérangement là, où est celle de tous les dérangemens des facultés intellectuelles.

Or, comme le cervelet est l'organe de l'instinct de la propagation, c'est de lui que doivent dépendre les surirritations et les dérangemens de cet instinct.

J'expliquerai plus bas, en traitant des autres facultés fondamentales, comment il se fait que la manie érotique est accompagnée tantôt de dévotion, tantôt d'orgueil, tantôt d'un autre sentiment exalté.† Ici, je continue de fournir les preuves de mon assertion: que le cervelet est l'organe de l'instinct de la propagation, et j'en trouve de nouvelles dans les différentes manières dont cet instinct se manifeste dans l'idiotisme.

* Pinel, sur l'Aliénation mentale, p. 172, § 169.

† Sur l'Aliénation mentale, p. 46 et 47, § 57.

Observations sur l'activité ou l'inaction de l'instinct de la propagation dans l'idiotisme.

On a le préjugé que les idiots, les imbéciles et les crétins sont très lascifs, et en proie à tous les effets d'un tempérament lubrique. Supposé qu'il en soit réellement ainsi, je demande si les parties génitales de ces pauvres d'esprit, ont une conformation particulière ? si elles sont parvenues à un développement plus exubérant, si elles sécrètent une liqueur séminale plus irritante ? si elles sont capables de bercer l'imagination d'images lubriques plus vives ? L'on ne saurait soutenir aucune de ces assertions.

Du reste, il s'en faut de beaucoup que l'instinct de la propagation se manifeste d'une manière très active chez tous les idiots et chez tous les crétins. J'ai soigneusement examiné un grand nombre de ces individus, et voici le résultat de mes recherches.

Que les parties génitales soient grandes ou petites, elles n'ont jamais une influence déterminée sur l'instinct de la jouissance vénérienne.

Cet instinct est sans activité, toutes les fois que le cervelet n'a acquis qu'un faible degré de développement. La sauvage de l'Aveyron, qui se trouve aux Sourds-Muets, à Paris, n'avait pas témoigné encore, à l'âge de seize ans, le moindre penchant pour les femmes ; aussi son cervelet était-il très faiblement développé. A Salzbourg, le professeur Hartenkeil me fit voir un crétin âgé de vingt et quelques années, chez lequel l'instinct de la propagation ne s'était jamais manifesté en aucune manière, quoiqu'il fût assez bien fait, et qu'il jouît d'une bonne santé ; son cervelet était également très peu développé. Dans une autre salle, au contraire, le même savant me montra une femme tellement contrefaite, qu'au lieu de marcher elle se traînait par terre : cette malheureuse se trouvait dans une espèce de ravissement toutes les fois qu'elle apperce-

vait un homme. A peine me fus-je approché d'elle, qu'elle grimpa sur son lit, et m'invita, par les gestes les plus lascifs, à l'y suivre ; elle jeta même tous ses vêtemens pour me donner l'hospitalité d'une manière plus cordiale. Ses facultés intellectuelles sont de beaucoup inférieures à celles des brutes, mais son cervelet est très développé ; aussi tous ses mouvemens ne tendent-ils qu'à satisfaire sa lubricité dans la solitude même. Je pourrais rapporter un très grand nombre de cas semblable, qui tous confirment mon opinion ; mais je me contenterai d'en rapporter encore quelques-uns, moins pour appuyer ma doctrine, que pour offrir au lecteur une observation morale.

Nous vîmes, à Munich, un garçon de quinze ans qui, dès sa septième année, avait voulu abuser de sa sœur, et avait manqué de l'étrangler parce qu'elle opposait de la résistance à ses désirs. Son idiotisme n'était pas des plus complets ; il parlait un peu, reconnaissait les personnes, et trouvait, comme un chien, du plaisir à regarder les passans par une fenêtre. Son cervelet était extrêmement développé, aussi fallait-il soigneusement tenir éloignées de lui les femmes et les filles. A Paris, M. Savary, alors ministre de la police, et M. de Bourrienne, m'amènèrent un garçon âgé d'à-peu-près seize ans, qui ne voulait absolument rien apprendre, et dont la société devenait très pernicieuse à ses condisciples, non-seulement à raison de son défaut de susceptibilité pour l'instruction, mais encore à raison de ses goûts antiphysiques. Je rendis ces messieurs attentifs au développement très peu considérable de son front, qui expliquait l'invincible indifférence qu'il témoignait pour toute instruction ; je leur fis remarquer en même temps ses bosses occipitales très proéminentes, sa nuque large et robuste qui rendaient raison de ses désirs effrénés. L'idiotisme de ce sujet était moins complet encore que celui du jeune homme de Munich, dont j'ai parlé tout-à-l'heure ; ceci me conduisit à faire encore une autre observation.

Dans plusieurs hospices pour les aliénés, et dans quelques maisons de correction, nous avons rencontré des sujets que l'on prétendait être devenus aliénés par suite d'émissions excessivement fréquentes de la liqueur séminale, ou que l'on vouloit punir de s'être livrés à l'onanisme.

Je suis bien loin de nier l'influence pernicieuse que l'onanisme exerce sur la manifestation des facultés intellectuelles, et plusieurs passages de mes écrits le prouvent suffisamment. Mais dans ces cas il faut d'ordinaire accuser une autre cause. La nature avait traité en marâtre, sous le rapport des facultés supérieurs, tous les sujets semblables que j'ai eu occasion d'observer. Chez eux, la partie antérieure du crâne était étroite et peu élevée, ou bien ils étaient plus ou moins hydrocéphales. Les parties postérieures du crâne au contraire, leur nuque, leur cervelet, avaient acquis un degré de développement qui n'était dans aucune proportion avec celui des parties cérébrales affectées aux facultés intellectuelles supérieures. L'homme ainsi organisé se trouve dans le cas de tout animal lascif; c'est un singe en chaleur. L'organe de l'instinct de la propagation le domine impérieusement, parce qu'aucun autre organe ne peut balancer l'activité du premier. Rien ce que nous appelons décence, mœurs, religion, ne peut agir sur un tel individu; les punitions ne sauraient l'effrayer; rien ne saurait engager à se contraindre un être ravalé au-dessous de la brute, et qui n'a pas de volonté. L'observateur philosophe reconnaît ici que la faiblesse de l'entendement est la cause de l'abandon à une sensualité brutale, tandis que, dans son erreur, le vulgaire regarde la faiblesse de l'intendement, comme une suite de l'abandon à la sensualité.

L'instinct de la propagation survit à la destruction des parties génitales, et subsiste dans l'absence de ces parties.

Une femme mariée qui mourut d'un cancer à la matrice s'était prostituée pendant la durée de sa longue maladie. Peu avant sa mort, elle exigea les approches de son mari. Une dame fut en proie pendant plus de deux ans à une maladie extrêmement douloureuse ; ce n'était déjà plus qu'un squelette ; des écoulemens abondans et infects, une cruelle dysurie, etc., annonçaient sa mort prochaine. Malgré tout cela, quoique son état rendit absolument impossible toute approche maritale, elle désirait avec une ardeur voluptueuse les embrassements d'un époux qu'elle chérissait. Après sa mort, arrivée peu de jours plus tard, je trouvai le vagin, la matrice et la vessie, en partie dissous en un liquide ichoreux et infect, en partie tellement rougés que les membranes et les fibres se déchiraient au moindre attouchement.

A Vienne, je donnai des soins à l'épouse d'un fabricant, laquelle, tant au physique qu'au moral, vivait avec son mari dans l'union la plus heureuse, quoiqu'elle n'eût jamais été réglée. Comme elle ne devenait jamais enceinte, et qu'elle désirait avoir des enfans, on examina sa conformation avec soin et à plusieurs reprises. Les sages-femmes, ni l'accoucheur, ne purent jamais découvrir d'utérus.

M. Richerand cite aussi quelques exemples de femmes ayant le même vice de conformation, et qui malgré cela avaient du penchant pour les plaisirs de l'amour.

“ L'utérus, dit-il, imprime-t-il au sexe toutes ses modifications distinctives, et doit-on dire avec Van Helmont ; *PROPTER SOLUM UTERUM MULIER EST QUOD EST ; c'est par la matrice seule que la femme est ce qu'elle est ?* Quoique ce viscère réagisse sur tout le système féminin d'une manière bien évidente, et semble soumettre à son empire la somme presque entière

des actions et des affections de la femme, nous pensons qu'il n'est pas à beaucoup près la cause unique des caractères qui la spécifient, puisque ces caractères sont déjà reconnaissables dès les premiers temps de la vie, lorsque le système utérin est loin d'être en activité. Une observation* très curieuse, consignée par le professeur Caillot, dans le second volume des Mémoires de la société de Paris, prouve mieux que tous les raisonnemens qu'on pourrait accumuler, jusqu'à quel point les caractères du sexe sont indépendans de l'influence de l'utérus. Une femme naît, croît et s'élève avec toutes les apparences extérieures de son sexe; arrivée à l'âge de vingt à vingt un ans elle veut obéir au penchant qui l'entraîne: vains désirs! efforts superflus! elle n'avait rien au-delà de la vulve d'ailleurs bien conformée. Un petit canal dont l'orifice n'offrait que deux lignes ou deux lignes et demie de diamètre, tenait la place du vagin, et se terminait en cul-de-sac à un pouce de profondeur. Les perquisitions les plus exactes faites en introduisant une algalie dans la vessie urinaire, et le doigt indicateur dans le rectum, ne purent faire rencontrer l'utérus. Le doigt introduit dans l'intestin sentait distinctement la convexité de la sonde placée dans la vessie, de manière qu'il était évident qu'aucun organe analogue à l'utérus ne séparait le bas-fond de ce viscère de la paroi antérieure du rectum: la jeune personne n'avait jamais été sujette à l'évacuation périodique; aucune hémorrhagie ne suppléait à cette excrétion; elle n'éprouvait aucune des indispositions qu'occasionne la non apparition des règles; elle jouissait au contraire d'une santé florissante; rien ne lui manquait de tous les caractères de son sexe, seulement son sein était peu développé. Parvenue à l'âge de vingt-six à vingt-sept ans, elle est devenue sujette à des pissemens de sang assez fréquens."†

*On trouve dans les Œuvres de la Métrie, Système d'Epicure, § 14, une observation semblable et non moins intéressante.

† Nouveaux Elémens de Physiologie, septième édition, t. II. p. 392, § CXCv.

J'ai déjà parlé de l'instinct de la propagation subsistant encore lorsque les testicules ont été enlevés, et lorsque les fonctions de la matrice avaient complètement cessé.

Maladies particulières du cervelet.

J'ai eu occasion d'observer une maladie toute particulière du cervelet.

A Vienne, le comte Philippe H....., âgé de quarante et quelques années se plaignait, depuis quelques mois, de douleurs hémorrhoidales; outre cela il éprouvait des nausées continuelles, une pression très désagréable dans la nuque, et une tendance à tomber en avant comme s'il voyait un précipice à ses pieds. Plusieurs médecins attribuèrent tous ces symptômes aux hémorrhoides; pour moi, j'en conclus qu'il existait un vice organique dans le cerveau. Quelques mois après, le malade mourut, et nous trouvâmes sur la tente (*tentorium*) une masse charnue de deux pouces de diamètre qui avait comprimé le cervelet. Plus tard, je lus, dans les ouvrages de Hahnemann, la description des mêmes symptômes; à l'autopsie cadavérique on avait trouvé le cervelet en pleine suppuration. A cette époque, je n'avais point encore fait attention à l'influence du cervelet sur l'instinct de la propagation, et sur les parties sexuelles.

Pour compléter les preuves de l'influence du cervelet sur les parties sexuelles, je vais copier les recherches sur les maladies organiques du cervelet, imprimées dans le *Journal de Physiologie expérimentale et pathologique*, par F. Magendie, membre de l'Institut, 1822, Nos. 2 et 3; par M. B. A. Serres, chevalier de la Légion-d'Honneur, l'un des médecins de l'hôpital de la Pitié, chef des travaux anatomiques des hôpitaux, etc.

Dans ce mémoire, M. Serres se propose de fixer l'attention des observateurs sur les apoplexies cérébel-

leuses. Comme toutes ses observations sont des preuves pathologiques du rapport qui existe entre le cerveau et l'instinct de la propagation, elles doivent faire partie de mon traité sur la fonction animale du cerveau.

Observation première.

Un homme âgé de trente-deux ans, fut apporté la nuit à l'Hôtel-Dieu, par la garde nationale de Paris, au mois d'avril 1814. Ceux qui conduisaient le malade nous apprirent qu'il avait été trouvé sur le quai avec des filles publiques, dont une, présente à sa réception, déclara que c'était dans l'acte du coït, et après avoir considérablement bu, que le malade était tombé dans l'état où nous le voyions.

La face était extrêmement rouge, la chaleur de la tête et du cou très élevée, le pouls était très fort et fréquent, quatre-vingt-dix pulsations par minute. La respiration était entrecoupée et lente, neuf, dix et onze inspirations par minute ; la somnolence était profonde, il ne donnait aucun signe de connaissance, et de temps en temps il était pris de mouvemens convulsifs et d'une roideur tétannique qui durait trois ou quatre minutes. En mettant le malade dans son lit, on s'aperçut qu'il était dans un état d'érection ; les parties génitales étaient dans un état de chaleur qui contrastait avec le froid des extrémités. On appliqua trente sangsues aux jugulaires, et on fit une large saignée du pied, qui ne produisirent aucun effet : le malade mourut la dixième heure de son entrée à l'hôpital. La rigidité de la verge avait cessé quatre heures avant la mort.

La première idée qui s'était présentée à nous, à l'aspect de l'érection insolite dont le malade avait été atteint, fut de présumer qu'il avait fait usage de quelque préparation de cantharides, qui, comme chacun sait, produisent ordinairement une irritation considérable sur les parties génitales. Cette opinion nous pré-

occupait en faisant l'ouverture du cadavre, et elle nous paraissait d'autant plus probable que les parties génitales étaient encore extrêmement gonflées, rouges, et que le gland présentait des taches violettes comme gangréneuses. On fit, dans cette idée, quelques essais sur les liquides contenus dans l'estomac et les intestins, qui ne donnèrent aucun résultat satisfaisant. Nous procédâmes ensuite à l'ouverture du crâne, et l'encéphale étant mis à découvert, tous les élèves présents furent frappés, ainsi que moi, de l'irritation vive dont le cervelet avait spécialement été le siège. Les hémisphères du cerveau ne présentèrent aucune trace d'altération organique, les tubercules quadrijumeaux antérieurs étaient très légèrement phlogosés, les postérieurs l'étaient à un degré beaucoup plus considérable, la masse médullaire désignée sous le nom de *processus cerebelli ad testes* était d'un rouge vineux, les feuillets du cervelet qui la recouvrent, et qui par leur jonction forment le processus vermiculaire supérieur, avaient le même aspect, et présentaient trois ou quatre petits foyers semblables à ceux qui sont représentés figure trois, nos. 2, 3, 4; dans le noyau des *processus cerebelli ad testes* se trouvait un foyer plus considérable dont l'étendue aurait pu contenir une balle de fusil d'un calibre ordinaire; les hémisphères du cervelet étaient très injectés, mais à un degré moindre que le processus vermiculaire supérieur; le noyau des hémisphères du cervelet et les faisceaux désignés sous le nom de cuisses du même organe conservaient les traces d'une assez grande irritation.

On se doute bien que cette altération organique ne nous frappa pas seulement à cause de son siège; l'opinion de Gall sur les rapports qui lient les organes génitaux au cervelet était trop répandue pour qu'elle ne vînt pas se présenter naturellement à l'esprit, et il nous parut que, dans ce cas, la rigidité de la verge et l'inflammation dont les parties génitales avaient été affectées pendant la courte durée de la maladie, était liée avec l'irritation dont le cervelet avait été le siège.

Toutefois un rapport pathologique si extraordinaire ne pouvait être établi d'après un seul fait ; avant d'admettre cette opinion il était nécessaire de voir si elle se vérifierait dans des cas analogues. Je consultai dans ce dessein les observations nombreuses que j'avais recueillies sur les apoplexies, et qui m'ont servi à composer le mémoire que j'ai cité plus haut. Dans le nombre il s'en trouva deux d'individus qui avaient présenté des inflammations cérébelleuses, et qui, pendant la durée de l'apoplexie, avaient eu des érections assez prononcées et des éjaculations abondantes. L'une d'elles m'avait été communiquée par mon confrère le docteur *Lafore*, alors interne de l'Hôtel-Dieu. Je ne possédais que ces trois cas lorsque je publiai mon premier travail sur les maladies organiques de l'encéphale, et leur singularité même fut la cause principale de la réserve que je mis alors à les faire connaître. De nouveaux faits sont venus confirmer les premières données, et non-seulement nous pouvons regarder comme positive l'existence des apoplexies cérébelleuses, mais encore nous pouvons espérer pouvoir les distinguer, dans la plupart des cas, de celles qui affectent les autres parties de l'encéphale.

Deuxième observation.

Thomas Marie-Anne, journalier, âgé de 55 ans, d'un tempérament sanguin, fort, très adonné aux plaisirs vénériens, passa au cabaret une partie de la journée du 19 avril 1818. Dans la nuit, somnolence, pesanteur, agitations momentanées, perte de connaissance, le malade ne répondait pas aux questions qui lui étaient faites, érection une partie de la nuit.

Il entra à l'hôpital le 20 avril au matin, et offrit les symptômes suivans : Face rouge et tuméfiée, stupeur légère dont il était retiré quand on l'excitait, respiration courte, suspicieuse par intervalles, treize, quatorze inspirations par minute ; pouls plein, fort, fréquent, quatre-vingts pulsations par minute ; hémiplegie du

côté gauche du corps, principalement à la jambe ; agitation spasmodique du côté droit. (Saignée de la veine jugulaire droite, lavement purgatif, orge, arnica, pour boisson ; potion antispasmodique).

Retour à la connaissance après la saignée, le malade paraît surpris de se trouver à l'hôpital. Le soir, paroxysme très fort, face très injectée, gonflée, chaleur considérable au cou, respiration lente, onze, douze inspirations par minute ; pouls dur, plus fréquent que le matin quatre-vingt-cinq, quatre-vingt-onze, quatre-vingt-quatorze pulsations par minute : somnolence profonde, insensibilité à tous les genres d'excitation, satyriasis très violent, tuméfaction et rougeur des bourses, immobilité du côté gauche, mouvement convulsif à droite ; éjaculation abondante à la fin du paroxysme. Saignée, sinapisme aux jambes ; même état après la saignée, râle pendant la nuit : le matin du 21, face violette, gonflée, lèvres et nez froids, respiration très rare, très courte, pouls petit, irrégulier, très fréquent, distorsion de la bouche, tuméfaction et rougeur vive des parties génitales, éjaculation, abondante mort à neuf heures.

Ouverture de cadavre.

En enlevant la voûte du crâne, il s'écoula une certaine quantité d'un sang noir. Tous les sinus de la dure-mère, ainsi que le confluent du sinus, étaient remplis de caillots noirs ; les vaisseaux de la pie-mère étaient gonflés dans toute son étendue ; la substance du cerveau ne présentait rien de particulier, mais le cervelet était plus rouge que dans l'état naturel. Lorsqu'on eut incisé une partie de l'appendice vermiculaire supérieur, l'action de l'air lui donna promptement une couleur rouge vif, toute la substance blanche de cette partie avait changé de couleur, on eût dit qu'elle avait macéré dans le sang. Plongée dans l'eau, elle se décolora, mais ne revint jamais à sa coloration naturelle. Quelques parties du noyau des processus paraissaient corrodées, mais il n'y avait pas

de foyer distinct. Le processus était divisé d'avant en arrière; nous aperçûmes un sang noir, épais, renfermé dans le quatrième ventricule; ce liquide avait pénétré en avant dans la scissure de Sylvius; en arrière, dans le calamus scriptorius.

En plongeant le cervelet dans l'eau, nous observâmes que ce sang provenait d'un foyer situé dans la partie centrale de l'hémisphère droit du cervelet; sa largeur était transversalement de deux centimètres et un millimètre; et d'avant en arrière, d'un centimètre trois millimètres; de haut en bas, il pouvait avoir un centimètre trois ou quatre millimètres; ses bords étaient frangés inégaux, surtout au côté externe; il occupait le centre de la masse grise qui se rencontre au milieu de l'hémisphère du cervelet; toute la substance blanche était injectée d'autant qu'on se rapprochait davantage des parois du foyer; la coloration formait des espèces de zones concentriques au foyer: la protubérance annulaire vers la naissance de la cinquième paire était phlogosée, ainsi que l'éminence olivaire et le commencement de la moelle épinière; les poumons étaient gorgés de sang, ainsi que les cavités droites du cœur et les veines caves ascendante et descendante; ces organes ne présentaient d'ailleurs aucune altération organique: le canal intestinal n'offrit rien de particulier.

Observation troisième, rédigée par M. MANCE, ex-élève interne de deuxième classe à la Pitié, et professeur à l'amphithéâtre des hôpitaux.

Bourgoin (Nicolas), âgé de 46 ans, fut apporté à l'hôpital le 17 mai 1818. On ne put avoir aucun renseignement sur son état antécédent; à la vérité il nous présenta tous les symptômes des apoplexies cérébrales violentes. La respiration surtout était profondément altérée, et offrait en outre de particulier des mouvemens spasmodiques généraux, presque convulsifs, et

par intervalles. Un symptôme sur lequel M. Serres fixa notre attention, c'est que la somnolence persistait pendant la durée de ces mouvemens. (Saignée au bras, vingt sangsues aux jugulaires ; à midi, lavement purgatif, limonade végétale, potion antispasmodique.) Rémission considérable des symptômes après les sangsues.

Le soir à sept heures, paroxisme très violent, respiration très courte, inégale, rare ; pouls fort, dur, très fréquent ; érection, tension et gonflement des parties génitales, éjaculation de sperme abondante pendant la nuit, et, à ce qu'il paraît, à la chute du paroxisme.

Le lendemain 18, les symptômes apoplectiques étaient plus intenses que le veille. Nous fîmes part à M. Serres du satyriasis que nous avions observé, et, sur ce symptôme, ce praticien nous dit qu'il était probable que le cervelet était le foyer principal de la maladie ; les mouvemens spasmodiques avaient cessé, il ne restait qu'un trismus léger des mâchoires ; la respiration était toujours courte, inégale ; le pouls vif, fréquent, intermittent, chaque sept ou huit pulsations. La somnolence était profonde, la pupille resserrée et peu mobile par le passage alternatif de l'obscurité à la lumière ; les membres étaient tendus, roides ; on éprouvait à les fléchir une grande résistance : l'insensibilité devint générale. Le satyriasis n'existait plus, quoique les parties génitales, le pénis et les bourses fussent très rouges, gonflés et d'une température fort élevée. (Sinapismes aux pieds, vingt sangsues aux jugulaires, potion antispasmodique.) Le soir, les mouvemens convulsifs reparurent, le satyriasis fut très violent, le râle survint à six heures, et le malade succomba à onze.

Ouverture. — L'ouverture du cadavre fut faite à la leçon d'anatomie. La tête était violette, principalement les oreilles ; la chaleur était conservée vingt-sept heures après la mort ; les membres étaient rigides et dans l'extension ; les parties génitales gonflées, quelques taches brunes se remarquaient sur les bourses.

M. Serres rappela à cette occasion un cas semblable qui s'était présenté à l'amphithéâtre quelque temps auparavant. Un cadavre apporté de l'hospice de Bicêtre nous avait frappés à la distribution des sujets, à cause du gonflement énorme du pénis. M. Serres l'ayant fait apporter à son cours, nous dit que d'après le rapport qu'il avait observé entre l'irritation des parties génitales et celle du cervelet, il était vraisemblable qu'on en rencontrerait des traces sur ce dernier organe. L'examen de l'encéphale avait confirmé ce pronostic, et avait été l'occasion d'une longue discussion entre M. Serres et M. Lallement, actuellement professeur à la Faculté de médecin de Montpellier. En rappelant cette circonstance, M. Serres nous fit observer que le cas présent offrait une occasion très importante de vérifier ce fait, d'autant plus que la connaissance de l'histoire de la maladie ne permettait pas de mettre en doute la coïncidence d'une affection aiguë de l'encéphale et d'une vive irritation des parties génitales. Le crâne ouvert, l'attention se porta aussitôt sur le cervelet, dont le volume était plus considérable qu'il ne l'est ordinairement. La pie-mère et l'arachnoïde enlevées, cet organe nous parut d'une rougeur très vive; quelques gouttes de sang étaient épanchées entre les sillons de sa face supérieure. Incisé à quatre linges environ de sa profondeur, toute la substance médullaire était d'un rouge vif. On mit à découvert trois petits foyers creusés dans l'épaisseur même de l'organe. Le premier, situé en arrière, à quelques linges du processus vermiculaire supérieur, était inégal, avait son plus grand diamètre transversal, et renfermait de petits grumeaux de sang. Le second, plus antérieur, se rapprochait davantage de la linge médiane, et avait une étendue double du précédent; il était aussi inégal, plus étendu d'avant en arrière que transversalement, et était rempli par un caillot de sang. Le troisième était situé à la partie antérieure et supérieure du cervelet. En outre, toute la substance du processus vermiculaire supérieur offrait, par intervalles,

de petites déchirures, qu'on pouvait regarder comme le rudiment de plusieurs petits foyers ; les tubercules quadrijumeaux, surtout les postérieurs, étaient phlogosés, ainsi que le gros faisceau désigné sous le nom de *processus cerebelli ad testes*.

Les poulmons, ainsi que les cavités droites du cœur, étaient gorgés d'un sang noir et coagulé. M. le docteur Edwards et M. le docteur Lisfranc, furent présens à cette ouverture.

Observation recueillie par M. DUBOIS élève interne de première classe à l'hôpital de la Pitié.

Le nommé Gambar, âgé de 52 ans, profession d'écrivain public, fut apporté à l'hôpital de la Pitié le 5 mars 1819. Il y arriva avec une perte complète de connaissance et insensibilité de la peau. La face était très rouge et injectée. La mort ne se fit pas attendre.

La peau était froide aux extrémités, et couverte d'une sueur visqueuse ; la déglutition était difficile, bruyante et laborieuse ; le pouls fort, développé, plein ; les yeux étaient rouges, injectés comme le reste de la face. Il y avait une résolution complète des membres soulevés, ils retombaient de leur propre poids ; on pinçait la peau sans exciter de douleur : il y eut quelques déjections involontaires. Les membres du côté gauche opposés à la paralysie étaient contractés ; l'avant-bras, fortement fléchi, ne s'étendait qu'avec peine ; le côté gauche de la face était pris de contractions spasmodiques, semblables à celles que l'électricité détermine dans les membres d'un animal récemment mort. Le pénis était dans un état constant de turgescence, et, dans certains momens, dans une érection complète. On remarquait sur la surface du gland quelques taches violettes qui semblaient faire craindre la gangrène. Les infirmiers nous dirent que le malade était toujours resté couché sur le dos, la tête fortement renversée en arrière.

L'ouverture fut faite par M. Serres lui-même, à son cours d'anatomie. Il avait annoncé une lésion du cervelet à cause de l'affection des parties génitales. On a trouvé dans le cerveau un épanchement dans l'épaisseur du corps strié du côté gauche, ou hémisphère gauche. L'épanchement avait au moins trois pouces de longueur et un pounce de large. Le sang était nouvellement épanché et en caillot rougeâtre un peu foncé ; un sang plus liquide était à la surface ; la portion du cerveau qui formait les parois de la poche où le sang était contenu, était diffluyente à cause de sa macération dans le sang : la portion au-dessous était injectée de sang. On vit au dessus et sur les côtés plusieurs taches jaunâtres, dures, véritables cicatrices du cerveau. Celui-ci du reste était très injecté. Le cervelet, et surtout le *processus vermicularis* supérieur, offraient de petits épanchemens nombreux de la grosseur d'un grain de chenevis ; mais en arrière de l'hémisphère droit du cervelet, on vit un caillot de sang de la grosseur d'une balle de fusil. Tout le reste présentait à-peu-près la même organisation que l'on rencontre dans les épanchemens du cerveau.

M. Serres déduisit cette conséquence : que le priapisme avait été produit par la lésion du cervelet, qui a un rapport connu avec les organes génitaux, comme l'établit en effet M. Gall ; et il pense que si ces lésions n'ont pas encore été observées, c'est faute d'attention de la part des médecins.

Suite des recherches sur les maladies organiques du cervelet, par M. SERRES, médecin de l'hôpital de la Pitié, etc.

Le précédent article nous a fait connaître le rapport pathologique qui existe entre le cervelet et les organes génitaux chez l'homme. La connaissance de ce rapport nous a été fournie par l'examen des malades pendant la vie, et des altérations organiques après la mort.

Remonter des symptômes au siège des maladies, établir leurs rapports avec les altérations organiques que nous présente le cadavre, telle est la marche que me paraissent devoir suivre les véritables observateurs en médecine, pour élever cette science au degré de certitude qu'elle peut atteindre.

Chacun sait que les maladies de l'encéphale sont celles qui offrent le moins de probabilité pour la certitude du diagnostique ; on a vu néan moins que non-seulement nous avons précisé pendant la vie le siège des apoplexies cérébelleuses, mais que l'ouverture des cadavres a répondu à notre attente, en justifiant notre prévision. Ne voulant exercer aucune influence sur l'esprit des praticiens, j'ai lassé éparler les élèves qui avaient recueilli les observations à ma clinique ; je n'ai rien ajouté à leurs réflexions, je n'en ai rien retranché ; je vais en agir de même à l'égard d'une observation nouvelle qui m'est communiquée par M. le docteur Falret, déjà connu dans la science par ses intéressantes recherches sur la mélancolie suicide.

Observation recueillie par le docteur Falret.

“ Je viens de lire avec le plus grand intérêt votre premier mémoire sur les apoplexies cérébelleuses, inséré dans le journal de M. Magendie. J'ai beaucoup regretté de ne pas y trouver l'observation d'un apoplectique que j'ai eu occasion d'observer dans votre division, à l'hôpital de la Pitié.

“ En 1820, dans un article sur l'Annuaire médico-chirurgical des hôpitaux, qui par des circonstances indépendantes de ma volonté, n'a pas été imprimé, je rendais hommage à la précision de votre diagnostique dans les maladies organiques de l'encéphale. Je rapportais à cette occasion l'entretien que nous eûmes dans une des salles de votre division, au sujet d'un apoplectique âgé d'environ cinquante ans, entré de la veille dans l'hôpital.

“ Pourriez-vous déterminer, me dites-vous, le siège positif que doit occuper l'épanchement chez ce malade ? Non, répondis-je ; et il y aurait, ce me semble, de la témérité à prononcer d'une manière affirmative. Eh bien ! reprîtes-vous, je suis ce médecin téméraire. Je pense que l'épanchement est dans le cervelet, j'en ai pour garant l'érection du pénis, symptôme qui en effet avait beaucoup fixé votre attention et la mienne. Cette preuve ne me parut pas d'abord sans réplique ; mais comme vous annonçâtes en même temps que le malade n'avait pas plus de trente-six heures à vivre, malgré tous les secours de la médecine, j'attendis l'examen du cadavre avec impatience, et à mon grand étonnement, je vis votre diagnostic parfaitement justifié.

“ Je ne rapporterai pas ici tous les symptômes apoplectiques que présentait ce malade ; ils étaient les mêmes que ceux des apoplexies cérébrales, mais de plus le pénis était gonflé, tendu, rouge, en un mot dans l'état d'érection. Voici en abrégé ce que nous trouvâmes à l'ouverture du cadavre :

“ Développement considérable des parties génitales, taches brunes sur le gland et sur les bourses, membres rigides et dans l'extension. Les tégumens du crâne n'offrirent rien de remarquable. Les sinus étaient gorgés de sang ; trois onces environ de ce liquide s'écoulèrent à l'ouverture de la tête. Les vaisseaux de la pie-mère étaient gonflés ; la substance grise du cerveau était rougeâtre, injectée ; mais on ne reconnut dans cet organe aucune trace d'épanchement ancien ou récent. Il n'en fut pas de même pour le cervelet ; indépendamment de l'injection de cet organe, nous remarquâmes dans la partie centrale du processus vermiculaire supérieur un large foyer s'étendant à droite et à gauche vers les hémisphères du cervelet ; un caillot sanguin le remplissait. Les *processus cerebelli ad testes* étaient très rouges ; le quatrième ventricule contenait du sang. Les poumons étaient gorgés de sang ; les organes de l'abdomen n'offrirent rien de remarquable.”

Quoique ces observations soient en quelque sorte la répétition les unes des autres, qu'elles contiennent toute la confirmation du même rapport entre l'irritation aiguë du cervelet et celle des parties génitales, j'en rapporterai encore quelques autres que j'ai recueillies moi-même, persuadé qu'on ne saurait trop accumuler les faits particuliers, quand il s'agit de constater l'existence d'une maladie inaperçue et aussi grave.

Apoplexie cérébelleuse.

Jean-Baptiste-François Girardin, âgé de quarante-deux ans, potier de terre, d'une constitution très robuste, ayant le cou très court, très large, la face très développée, grand mangeur et grand buveur, très adonné aux femmes, était habituellement sujet à un flux hémorroïdal qui s'était supprimé depuis quelques mois. Le mois de janvier 1819, ce malade avait contracté une blennorrhagie pendant le cours de laquelle il avait eu des érections vives qui avaient nécessité l'emploi des sangsues au périnée, et l'usage des bains de siège. Il était à peine guéri, qu'il revint à ses anciennes habitudes. Il avait passé la nuit du 18 au 19 janvier dans un mauvais lieu ; et s'étant mis dans un accès de colère violent sur les représentations qui lui avaient été faites sur sa conduite, il avait disparu de chez lui dans la matinée du 19. On l'apporta le soir sans connaissance, la face tuméfiée et rouge, ses habits couverts d'alimens et de vin qu'il avait régurgités. On essaya de faire vomir le malade par l'emploi de l'ipécacuanha, mais on n'y réussit point. On apporta le malade dans ma division, le 20 mars au matin. Après m'avoir fait le récit que je viens d'exposer, sa femme me prit en particulier, et me confia que pendant toute la nuit il avait été en érection, et qu'elle présu-mait qu'il avait contracté une nouvelle maladie vénérienne.

J'examinai aussitôt les parties génitales, et je trouvai en effet que le pénis était encore tuméfié, rouge. En

examinant la chemise qu'on venait de lui ôter, nous remarquâmes qu'il y avait eu dans la nuit une éjaculation abondante. Le malade était en outre dans la stupeur; la face était vineuse et gonflée; le cou était tuméfié; la main, appliquée sur la région occipitale, donnait la sensation d'une chaleur brûlante; la respiration était courte, lente; chaque deux ou trois minutes il y avait une inspiration très longue; le pouls était fort, plein, dur, et fréquent; l'œil était injecté, la pupille contractée, les membres supérieurs et inférieurs excités; le malade les retirait et paraissait avoir le sentiment de la douleur.

Je fis pratiquer une saignée copieuse à la veine jugulaire, j'employai les révulsifs sur les membres inférieurs, et je fis appliquer des compresses trempées dans de l'eau à la glace sur les parties génitales; je fis prendre intérieurement la limonade citronnée en grande quantité, et après la saignée, je fis appliquer vingt sangsues aux vaisseaux hémorroïdaux.

La respiration devint plus libre après la saignée et l'application des sangsues; le pouls se ralentit; il y avait neuf, dix et douze pulsations de moins par minute. Les parties génitales étaient néanmoins toujours gonflées, rouges, mais l'érection du pénis ne reparais-sait pas. La stupeur était diminuée, le malade parut même avoir repris sa connaissance.

Le soir, un paroxysme violent s'étant manifesté, on fit demander le chirurgien de garde, qui observa l'érection du pénis, et crut remarquer que le malade y portait la main. Il appliqua sur le membre viril de la glace pilée; l'érection parut calmée pour quelque temps; mais dans la nuit elle survint avec une nouvelle intensité. La respiration devint très difficile; le bruit que son ronflement occasionnait fatigua beaucoup les malades qui l'avoisinaient; il passa la nuit dans cet état.

Le 21 au matin érection avait cessé, la respiration était courte, le poumon semblait ne se dilater que partiellement; le pouls était vif, précipité; la face était

livide et froide ; les extrémités étaient au-dessous de leur température ordinaire ; l'œil était terne, la pupille dilatée et immobile quand on frictionnait le globe de l'œil et qu'on ouvrait et fermait alternativement les paupières. Le malade paraissait paralysé du côté droit, tout annonçait une mort prochaine ; le malade succomba en effet cinq heures après la visite.

Ouverture du cadavre.

Les tegumens du crâne étant enlevés, nous remarquâmes que la protubérance occipitale externe portait une saillie très considérable ; nous fûmes également frappés de la brièveté du cou et du volume des couches musculaires de cette partie. Le crâne ouvert, les sinus étaient gorgés de sang, notamment le *torcular Herophili*. Les vaisseaux de la pie-mère étaient très injectés sur le cerveau et le cervelet ; le plexus choroïde renfermait quelques petits kistes aqueux, qu'on désigne sous le nom d'*hydatides*. Après avoir mis à nu le cervelet, nous aperçûmes la substance corrodée dans la partie antérieure du cervelet ; sur les bords de cette déchirure, il y avait quelques grumeaux sanguins qui indiquaient la présence d'un foyer creusé dans cette partie ; en effet, en portant le doigt dans cette déchirure, nous pénétrâmes dans une caverne étendu à droite, de quatre lignes environ, vers la partie moyenne de l'hémisphère du même côté ; à gauche, le foyer peu profond s'était étendu plus avant dans le centre de l'hémisphère ; intérieurement, le foyer avait été borné par le lobule tonsillaire qui servait de plancher au foyer ; de cette manière, il n'avait pas pénétré dans l'intérieur du quatrième ventricule.

La substance blanche du cervelet était irritée et rouge tout au pourtour du foyer ; il y avait même quelques traînées de capillaires remplis de sang, qui lui donnaient un aspect marbré.

Les poumons étaient gorgés de sang ainsi que les cavités droites du cœur ; la veine cave ascendante, les

veines jugulaires internes et externes, et tous les sinus cérébraux, comme nous l'avons déjà remarqué, étaient pleins de sang.

L'estomac et le commencement des intestins grêles étaient phlogosés; quelques ganglions mésentériques étaient engorgés çà et là. La vessie était remplie d'urine. Les organes génitaux tuméfiés offraient quelques taches livides vers la partie moyenne du scrotum; le tissu lamineux des corps caverneux du canal de l'urètre et du gland était gorgé de sang.

Le cervelet avait un volume plus considérable que dans l'état normal; les artères vertébrales étaient d'un calibre plus grand que dans l'état ordinaire. Cette augmentation de calibre était partagée par toutes les artères cérébelleuses. On peut même présumer que l'accroissement relatif du cervelet provenait de cette dilation de son système artériel.

Apoplexie cérébelleuse sans érection du pénis.

Après des observations si précises, j'étais presque en droit de conclure que le symptôme pathognomonique des apoplexies cérébelleuses était l'érection du pénis pendant la durée de la maladie. Je me suis en effet adressé cette question: toute apoplexie cérébelleuse est-elle accompagnée d'érection insolite? On devait le déduire des faits qui précèdent; l'observation suivante va nous montrer une exception, dépendante peut-être du lieu qu'occupait le foyer dans la profondeur du cervelet.

Jean-Charles Montagnon, blanchisseur, âgé de cinquante ans, mélancolique depuis sa première jeunesse, avait été sujet, dès l'âge de quarante ans, à des tournoiements de tête très incommodes, pour lesquels on lui appliqua un cautère au bras gauche. Il contracta également l'habitude de se faire pratiquer une saignée chaque deux mois, pour remplacer un flux hémorroïdaire qu'il avait eu de trente à quarante ans. Ces précautions et un régime assez régulier le firent jouir

d'une santé assez bonne jusqu'au 12 août 1821. Ce jour il s'échauffa beaucoup dans une marche forcée et se coucha au soleil, où il dormit environ deux heures. En s'éveillant, il se sentit engourdi; la jambe droite lui parut si lourde, qu'il lui semblait, dit-il en rentrant à ses fils, qu'elle était de plomb. Il fut triste toute la soirée, mangea et but très peu, et se mit au lit, assiégé par les idées les plus sinistres.

Pendant la nuit, le malade s'étant levé pour satisfaire quelques besoins, fut pris d'un étourdissement violent, suivi de chute dans laquelle la partie antérieure de la tête heurta l'angle d'une commode qui avoisinait son lit. On le releva sans connaissance. Il était dans une stupeur et une insensibilité profondes. On lui fit avaler de l'eau de mélisse mêlée à une infusion de tilleul, qui provoquèrent un vomissement abondant de matières verdâtres.

Après avoir vomi, il se trouva plus accablé, dit qu'il était perdu, et retomba dans la stupeur dont le vomissement l'avait retiré momentanément. Le médecin qui fut appelé dans la matinée du 13, fit pratiquer une saignée du bras qui ne produisit aucun changement à son état. On se décida alors à le conduire dans un hôpital. Il entra à la Pitié le 13, à deux heures de l'après-midi.

L'élève de garde qui fut demandé le trouva dans l'état suivant: face très rouge, abattue; respiration très lente; le malade avait été menacé de suffocation dans la voiture qui l'avait amené; pouls dur, fort et fréquent; intermittence chaque trois et quatre pulsations; paralysie du côté droit; mouvement léger dans le bras quand on l'excitait; immobilité et rigidité de la jambe; langue jaune; œil fixe, pupille resserrée et très sensible à l'action de la lumière. On appliqua des sinapismes aux cuisses, on administra l'eau de veau émétisée, qu'on fit avaler difficilement, à cause de la contraction des muscles des mâchoires. Potion antispasmodique.

Je vis le malade dans la soirée, il était agonisant,

pâle, les lèvres violettes, la face tout-à-fait décomposée, la respiration vive, entrecoupée; on n'avait pu lui faire avaler sa potion. Il mourut dans la nuit, après avoir eu quelques mouvemens convulsifs des muscles de la face.

Ouverture du cadavre.

Sur le rapport qui m'avait été fait par l'élève de garde qui avait vu le malade, je crus qu'il avait succombé à une apoplexie cérébrale, et que nous allions rencontrer le foyer apoplectique dans l'hémisphère gauche du cerveau, la paralysie ayant été du côté droit. Je portai en conséquence toute mon attention sur cette partie de l'encéphale; mais l'ayant trouvée intacte, je continuai mes recherches avec tout l'intérêt que pouvait inspirer une paralysie bien constatée coïncidant avec une intégrité parfaite des hémisphères cérébraux. Je fis enlever avec soin le cervelet, quoique je n'eusse aucun soupçon que cet organe pouvait avoir été le siège de la maladie; mais en le renversant et le retirant du crâne, le doigt de l'élève interne qui faisait l'ouverture pénétra dans une caverne située à la base de l'hémisphère gauche de cet organe. Ce foyer contenait environ demi-once de sang; les bords en étaient inégaux, mais le cervelet n'avait pas été déchiré en totalité, car il n'y avait pas de sang épanché dans les cavités occipitales du crâne. Il s'étendait un peu en dehors et en arrière, vers le lobule mince de *Malacarne*. Intérieurement il ne s'était pas étendu dans le quatrième ventricule, quoique son extrémité se dirigeât vers la partie externe du corps rhomboïdal (corps strié du cervelet.) La matière qui l'environnait était phlogosée à une ou deux lignes d'étendue seulement. Du reste, la substance cérébelleuse n'était pas enflammée, quoique les vaisseaux de la pie-mère fussent plus distendus que dans l'état ordinaire.

Les poumons et les cavités droites du cœur étaient gorgés de sang noir, épais et coagulé.

Quoique cette observation ne coïncide pas avec les précédentes, elle mérite la plus grande attention : je fis prendre des renseignemens auprès des parens, pour savoir si l'érection s'était manifestée lors de l'invasion. La réponse fut négative. On ajouta même que le malade avait toujours mené une vie régulière. Pendant son séjour à l'hôpital, on n'avait aperçu aucun signe de gonflement ou d'érection du pénis. Il est alors à présumer que ce symptôme ne s'était pas manifesté chez ce malade. Reste à savoir maintenant si l'absence de l'érection tient au siège différent qu'occupait le foyer dans le cervelet. Je le pense, mais ce n'est qu'après de nouvelles observations qu'on pourra le conclure avec certitude. Pour le moment, nous devons nous borner à appeler sur ce point l'attention des praticiens.

Apoplexie cérébelleuse ayant son siège dans le lobule tonsillaire.

Parmi le grand nombre de cerveaux de l'homme que j'ai anatomisés pour mon grand ouvrage sur l'anatomie comparative de l'encéphale, on a rencontré un très grand nombre de lésions organiques anciennes ou récentes : l'une d'elles était située dans le lobule tonsillaire du cervelet ; le cadavre avait été apporté de l'hospice Saint-Antoine à l'amphithéâtre des hôpitaux, et était fort vigoureux ; je n'ai pu avoir aucun renseignement sur sa maladie ; je le regrette d'autant plus que j'ai constaté que l'homme seul possède ce lobule ; que chez les singes, les phoques et les cétacés, dont l'encéphale se rapproche le plus de l'homme, on ne rencontre dans leur cervelet aucune partie qui lui ressemble. Sur ce cadavre, ce lobule avait été détruit presque en totalité par le foyer, et le sang s'était épanché dans le quatrième ventricule. Les parties génitales étaient très développées, mais sans gonflement pathologique.

Apoplexie cérébelleuse chez la femme.

Il est inutile de dire que le symptôme tiré de l'érection du pénis n'est applicable qu'à l'homme. La femme étant exposée comme lui à cette cruelle maladie, on doit donc chercher à la reconnaître sur d'autres indices ; peut-être en trouvera-t-on dans le clitoricisme, dans la tendance à la nymphomanie. Une seule de mes observations peut mettre sur la voie à ce sujet.

Cérébellite chronique.

Marie-Jeanne-Joséphine Dubourg, âgée de trente-trois ans, couturière, fut livrée de bonne heure aux excès vénériens. Elle ne fut réglée qu'à vingt ans, quoiqu'elle se fût livrée dans une maison de débauche à tous les excès du coït, et peut-être même à cause de ces excès. Jusqu'à trente ans, de son propre aveu, elle avait été fatiguée, mais jamais rassasiée des plaisirs vénériens, et malgré les efforts de ses parens pour la retirer de la vie scandaleuse qu'elle menait, elle y était, disait-elle, irrésistiblement entraînée. Cet état dura jusqu'à l'âge de vingt-neuf ans ; à cette époque, la cohabitation de l'homme ne pouvant assouvir ses desirs, elle se livra avec fureur aux excès de la masturbation, et tomba dans un assoupissement habituel à la suite de ces excès, assoupissement qu'on attribua aux boissons spiritueuses dont elle abusait également.

Honteuse de cet état, elle se soumit à un traitement assez violent ; on brûla le clitoris dans l'espérance de faire cesser ses fureurs érotiques, qu'on regarda comme la cause d'une phtisie pulmonaire qui inquiétait la malade. Elle sortit de l'Hôtel-Dieu sans avoir éprouvé le soulagement qu'elle attendait, et reprit ses anciennes habitudes.

Elle éprouva en outre des maux de tête très intenses, et devint tout-à-fait imbécille à l'âge de trente-deux ans; elle mourut à la Pitié, où elle était entrée pour aller à l'hospice de la Salpêtrière. Elle succomba à une phthisie pulmonaire.

A l'ouverture du cadavre nous rencontrâmes une induration de l'appendice vermiculaire supérieur et inférieur; en quelques endroits il existait de petites ulcérations qui auraient renfermé un pois à cautère ordinaire. Les bords étaient durs, jaunâtres, le fond était tapissé par une membrane épaisse; il y avait dans la petite cavité une sérosité jaunâtre; en outre, sur le devant de l'appendice vermiculaire supérieur, toute la partie du cervelet était ramollie, et d'un jaune blanc; la substance cérébelleuse était dégénérée au point où elle se trouve chez l'embryon humain du deuxième mois et du commencement du troisième. Tout au pourtour des appendices vermiculaires, le cervelet était phlogosé et plus dur que dans l'état ordinaire. Les artères cérébelleuses étaient plus développées qu'elles ne le sont ordinairement.

J'avais fait injecter le cadavre pour bien examiner ces dernières artères; je portai également mon attention sur celles du bassin, et nous trouvâmes toutes les divisions de l'artère hypogastrique accrues de volume; les utérines, les vaginales, les vésicales, les hémorroïdales, étaient prodigieusement dilatées. Existait-il un rapport entre ces développemens des artères du bassin et la nymphomanie? je le pense, et je fonde cette assertion sur l'inspection anatomique de ces mêmes artères chez les phthisiques. Chacun sait que les phthisiques sont enclins au coït et à la masturbation d'une manière désordonnée; sur environ soixante cadavres que j'ai examinés dans cette intention, j'ai constamment trouvé les divisions de l'artère hypogastrique très augmentées dans leur calibre. Que cette dilatation du système artériel soit effet ou cause, l'observation ne m'en paraît pas moins essentielle à constater. J'ai aussi remarqué le cervelet, mais je n'ai rien trouvé

de remarquable ni dans son volume ni dans son poids.

Cérébellite chronique, observée chez un singe.

Je dois à la bienveillance de MM. les professeurs du Jardin du Roi, l'avantage d'avoir pu examiner l'encéphale d'un grand nombre d'espèces de mammifères que je n'aurais pu me procurer par mes correspondances particulières. Sur un singe mort en novembre 1821, j'ai rencontré la partie médiane du processus vermiculaire supérieur, et la partie interne de l'hémisphère droit du même organe, ramollies, jaunes, dans une espèce de bouillie.

Ce singe (le papion) était mort d'une phthisie pulmonaire. Il n'avait point eu de paralysie, mais depuis plusieurs mois il était triste, taciturne et sans appétit.

Apoplexie cérébelleuse chez la femme ; observation communiquée par le D. FALRET.

Marie-Jeanne Renouville, âgée de cinquante-trois ans, d'un tempérament sanguin, d'une petite structure, née d'un père qui a succombé à une attaque d'apoplexie, avait toujours joui d'une bonne santé. Le 2 septembre 1817, Renouville fut trouvée morte dans son lit. Rien la veille n'avait pu faire pressentir sa fin prochaine. L'ouverture du cadavre fut faite vingt-quatre heures après la mort. On trouva dans le crâne un épanchement énorme de sang, qui paraissait avoir commencé dans le quatrième ventricule, et avait déchiré le cervelet, au point qu'il formait une cavité dont les parois n'avaient que trois lignes d'épaisseur, et qui était remplie par un caillot de sang du volume d'un œuf de poule. Le cœur était très volumineux, le ventricule gauche avait plus d'un pouce d'épaisseur ; il y avait quelques ossifications aux valvules artérielles.

Les autres viscères paraissaient dans un état sain."

Cabanis a connu trois hommes qui, dans la force de l'âge, étaient devenus tout-à-coup impuissans. Quoiqu'ils se portassent bien d'ailleurs, leur humeur devint sombre et chagrine, et leur esprit parut bientôt s'affaiblir de jour en jour. Il est très probable que l'impuissance des parties de la génération a été précédée par la maladie du cerveau, particulièrement et primitivement du cervelet.

Conclusion.

Le grand nombre des faits physiologiques et pathologiques puisés dans l'homme et dans les animaux, ne prouvent pas seulement que le cervelet est l'organe de l'instinct vénérien, mais ils servent encore à expliquer les phénomènes suivans :

1. Comment des irritans appliqués dans la nuque, tels que des vésicatoires, des sétons, des frictions faites avec des substances volatiles et spiritueuses, produisent souvent une violente irritation dans les parties génitales, provoquent l'écoulement menstruel, lorsqu'il a été supprimé, remédient aux accidens causés par leur suppression, et guérissent l'impuissance provenant de causes débilitantes, bien mieux que tous les moyens que l'on a coutume de faire agir sur les parties sexuelles.

2. Pourquoi, au contraire, des ventouses, des sangsues, des lotions et des embrocations froides, faites dans la nuque, guérissent souvent la manie érotique, surtout lorsqu'elle est née brusquement, et deviennent d'excellens moyens contre le priapisme, le satyriasis, la nymphomanie et les pollutions nocturnes, supposé cependant que ces dernières ne soient pas une suite de l'épuisement.

3. Pourquoi les pendus ont de violentes érections, et d'abondantes émissions de liqueur seminale.* S'il

* Archenholz rapporte, dans ses *Brittische Annalen* (Annales Brit-

est vrai que les mêmes symptômes se manifestent dans la rage, de fréquentes saignées, etc., dans la nuque, produiraient, peut-être, d'heureux effets, dans cette maladie.

4. Pourquoi, dans quelques cas de lésions du cerveau, les blessés portent les mains, d'abord aux parties sexuelles et puis à la tête.

5. Pourquoi dans les cas d'inflammation des parties génitales, il y a toujours grand danger, lorsqu'il s'y joint délire et inflammation des parotides, ou lorsque dans le délire les malades portent souvent les mains sur les parties sexuelles.

6. Pourquoi la maladie se termine presque toujours par la mort, lorsque dans ces cas il y a délire, mouvemens désordonnés et convulsifs, et prostration des forces ; symptômes que l'on explique par une fièvre ataxique, tandis qu'ils proviennent d'une inflammation cérébrale.

7. Pourquoi chez les hommes morts d'une apoplexie occasionée par les efforts d'un coït trop voluptueux, on trouve presque toujours du sang épanché dans le cervelet. Il y a très peu de temps que j'ai eu encore l'occasion de confirmer cette observation.

8. Pourquoi les désirs amoureux excessivement ardens sont souvent les précurseurs de l'apoplexie.

9. Pourquoi une cohabitation très ardente, répétée trop souvent peut produire l'aliénation mentale. Forestus, lib. X, observ. 25, en rapporte un exemple.

10. Pourquoi chez les soldats Turcs et Persans qui ont fait un usage excessif de l'opium les érections continuent encore long-temps après la mort.

anniques), qu'en Angleterre des débauchés ont poussé le raffinement jusqu'à imaginer une machine à l'aide de laquelle leur maîtresse les pend quelques instans avant de les recevoir dans ses bras.

Philosophical Observation.

Before closing these considerations, I wish to direct the attention of physicians to the different degrees of manifestation, of which the instinct of generation is susceptible. In infancy, and even in some persons who have acquired their full growth, we do not observe it at all; these individuals are absolutely indifferent to women. It commences its manifestation under the form of interest, taste, inclination; it soon assumes that of desire, passion, and it may terminate by degenerating into the most degraded lasciviousness, and into true erotic mania. All these different degrees then are only modifications of one and the same fundamental quality. This remark confirms what I have said in another place, on the gradations of the same propensity, and will be of the greatest use to us hereafter.

Some remarks on the Report, made to the Academy of Sciences on Experiments, relative to the Functions of the Nervous System, by Baron Cuvier, perpetual Secretary of the Academy.

M. Flourens has just made some mutilatory experiments on the nervous system, particularly on the brain and cerebellum. He believes, that he has proved by this means, that the cerebellum is the regulator of the movements of voluntary motion (*des mouvements de translation*). As some may be tempted to conclude from this, that the cerebellum is not the organ of the instinct of generation, I have deemed it necessary to make a critical analysis of these experiments.

I have not seen the memoir of M. Flourens; I only am acquainted with the report of M. Cuvier; hence his report will serve as the basis of my reflections.

Baron Cuvier commences by correcting, in a proper

manner, the new language adopted by M. Flourens. I have observed with pleasure that he has endeavoured to avoid confusion in the terms *irritability* and *sensibility*, sensibility and the conductor of irritation, &c.

“To express then,” says M. Cuvier, “in general language, the true questions that M. Flourens has proposed to himself, and which, perhaps, are not determined with sufficient clearness in the title of his memoir, we shall say that he has endeavoured to ascertain by experiment,

“1. From what points of the nervous system must artificial irritation set out in order to arrive at muscle.

“2. To what points of this system ought impression to be propagated, to produce sensation.

“3. From what points voluntary irritation descends; and, what parts of the system ought to remain untouched, in order to produce it regularly.

“We will add that, in this first part, he has only considered these questions so far as they relate to vertebrated animals and to their nervous system of animal life; that is to say, to the brain, the spinal marrow, and to the nerves which come out from them.

“In order to resolve these questions, the author commences with the nerves, and repeating, as it respects them, experiments already known, he establishes the two general effects of their irritation, to be such as we have just announced them; he shows in a very precise manner that, in order that contraction should take place, there must be a free and continuous connexion between the nerve and muscle; and that, for sensation, a free and continuous communication with the brain is necessary; and he concludes that neither contraction nor sensation belong to the nerve; that these two effects are distinct; that they can take place independently of each other, and that these propositions are true, at whatever place or whatever branch of the nerve, the communication is intercepted.

“Pursuing the same course for the spinal marrow, he arrives at similar results. When it is irritated in

any point, it causes contractions in all the muscles which derive their nerves from below this point, if the communications have remained free; if the communications are interrupted, no contractions take place. It is exactly the inverse of this as it regards the sensations; and as in the nerves the empire of the will requires the same freedom of communication as sensation, the muscles below the intercepted point no longer obey the will of the animal, and he no longer perceives them. Finally, if the spinal marrow is intercepted in two different points, and the space comprised between these two points is irritated, the muscles, which receive their nerves from this space only, experience contractions, but the animal no longer has any control over them, nor receives any sensation from them.

“We cannot report all the different combinations, with which M. Flourens has varied the experiments detailed in his memoir; it is sufficient to say, that they all tend to the results, which we have just mentioned.

“The author concludes from this, that sensation and contraction no more belong to the spinal marrow, than to the nerves; and this conclusion is true, as it regards all animals. It would be an important question to decide, if it is equally the case with animals who have been deprived of their brain, and which, in certain classes, appear very far from losing instantaneously all their animal functions; but it is a question to which we shall have occasion to revert, in the sequel of this report, even as it respects warm blooded animals.

“M. Flourens concludes further, from a part of his experiments, that it is in consequence of the communication established between all the nerves by means of the spinal marrow, that there is established what he calls the dispersion or generalization of irritations, or, in other terms, general sympathies; but he has not sufficiently developed this proposition, to enable us to appreciate the reasonings, on which he founds it.”

These experiments and these results being known, I shall dispense with making any reflections.

Baron Cuvier continues :

“ He comes finally to the brain, and it was in this central part of the system, that we were led to expect new information from experiments, better directed than those of former physiologists.

“ In fact, although Haller and his school had made many attempts upon the brain, to learn its vital properties, and whatever there might be peculiar in the functions of the different parts of which this complicated organ is composed, it may be said that these attempts have not been attended with sufficiently careful results ; because, on the one hand, neither the connexion of the parts of the brain, nor the directions and communications of their medullary fibres, were sufficiently known at this period ; and, in the other, these different parts were not sufficiently isolated in the experiments. When, for instance, the brain was compressed, it was not well known, on what point of the interior the compression had most strongly acted ; when an instrument was passed into the brain, the depth to which it extended, was not sufficiently examined, nor into what organ it had been introduced. M. Flourens objects, with some reason, to the experiments of Haller, Zinn, and Larrey ; and he has endeavoured to avoid this difficulty by operating principally by means of ablation, that is to say, by removing, whenever it was possible, that particular part, the especial function of which he wished to know.”

The reasons, that induce Baron Cuvier to object to the methods of Haller, Zinn, and Larrey, are very good. But, it is to be feared, that ablation is not by any means the best method of learning the special function of any particular part of the brain. Cuvier distinguishes very correctly, the vital properties of the brain from their particular functions. We shall see, hereafter, whether the function, that M. Flourens believes may be attributed to the cerebellum, is not rather a special

function, than a vital property common to the medulla spinalis and the medulla oblongata. We must first know the special functions ; that is to say, those which constitute animal life, before we can obtain a knowledge of them by means of ablation. For, in this case, the animal can no longer manifest their presence or absence. But up to the present time, these special functions have not been known. Let us suppose that M. Flourens wishes to determine, by the ablation of the cerebellum, whether this part is or is not the organ of the instinct of generation, how will he be enabled to make the animal live sufficiently long, to decide whether the animal retains or has lost this instinct? By the ablation of the hemispheres, vision and hearing are lost ; will any one be correct in saying, that vision and hearing are special functions, or, all the special functions of the hemispheres? If we did not previously know that animals possessed memory, how shall we be enabled to determine that the same operation had destroyed it? How can we subject an animal, thus mutilated, to experiments on special functions of which we have no idea? And how can we remove from the brain a single organ? Does any one know the commencement, the termination, or the limits of an organ?

Finally, how can we remove a part without affecting those that are contiguous to it? How can we remove the cerebellum, especially in the mammalia, without injuring the *medulla oblongata* and all the parts with which it communicates, its commissure in the *pons Varolii*, intertwined with the nervous fasciculi of the *medulla oblongata*, the *tubercula quadrigemina*, &c. And as the effects of the lesion are transmitted, to what part shall we then attribute the symptoms, themselves? Neither should we ever forget, that one and the same part may have its general vital function, and its particular animal function beside. If it were true, that the lesion of the tubercles in birds, always causes convulsions, it is not the less true, that the tubercles

are destined for vision. So, also, the cerebellum may participate in the vital function of the *medulla spinalis* and *medulla oblongata*, and, at the same time, have a particular animal function. Cuvier admits, that the brain is not only necessary for vision, for hearing, and, to convert the irritations of other nerves into sensations, but also, that it is the seat of memory and judgment; which are here, general vital functions, and special, particular animal functions?

Thus, all these experiments, by mutilation or ablation, confirm what I have before said, that, at most, we can obtain but few results, almost always very doubtful, in relation to the phenomena of irritability and sensibility, the functions of certain viscera, and those of voluntary motion. But never shall we obtain the least knowledge of the special functions of the cerebellum or the integral parts of the brain.

But Cuvier continues:

“In order that the results that M. Flourens has obtained, may be better understood, we will call to mind, in a few words, the vitality and mutual relations of the parts in question.

“We now understand, and particularly by the late researches of MM. Gall and Spurzheim, that the *medulla spinalis* is a mass of medullary matter, white externally, grey internally, divided longitudinally above and below by furrows, two fasciculi of which communicate together by means of transverse medullary fibres; that it is bulbous at intervals, and that it gives out a pair of nerves from each bulb; that the *medulla oblongata* is the superior part of the spinal marrow contained in the cavity of the cranium, which also gives out many pairs of nerves; that the fibres of communication of its two fasciculi, there intertwine in such a manner, that those of the right ascend to the left, and reciprocally; that these fasciculi, after being dilated a first time in the mammalia, by a mixture of gray matter, and having formed the prominence known as the *pons Varolii*, separate and take the name of

crura cerebri, continuing to give out nerves; that they swell out again by a new mixture of gray matter, and form the masses commonly called *optic couches*, and a third time, to form those that we call *corpora striata*; that from the whole of the external border of these last protuberances, there arises a layer more or less thick, and folded externally according to the species of animal, entirely lined with gray matter which returns to cover them from above, forming what we call the hemispheres, and which, after being bent in their middle, unite with each other by one or more commissures or fasciculi of transverse fibres, of which the most considerable, which exists only in mammalia, takes the name of *corpus callosum*. We know, farther, that on the *crura* of the brain, behind the optic couches, there are one or two pairs of protuberances much smaller, known when there are two pairs, as in the mammalia, under the name of *tubercula quadrigemina*, and from the first of which the optic nerves appear to arise; that the olfactory nerve is the only one that does not evidently take its origin in the marrow or pillars of the brain; finally, that the cerebellum, a single mass, white within and cineritious without like the hemispheres, but oftener much more divided into external folds, is placed cross-wise behind the *tubercula quadrigemina* and upon the *medulla oblongata*, with which it is connected by transverse fasciculi, which are called the *crura* of the *cerebellum*, and which are inserted into the sides of the *pons Varolii*."

Those readers who wish to compare the report on our memoir, that was presented to the Institute in 1808, with these passages, will easily perceive the subjects in the anatomy of the brain, that were then called in question, or altogether denied, and which are now adopted. This change of opinion justifies our anatomical discoveries, and does honor to the reporter. I am fully persuaded, that when this celebrated naturalist shall have studied my physiological discoveries, his ideas will be in accordance with my own.

When Cuvier speaks of the *cerebellum* as a single mass, he can only mean the cerebellum of fishes, reptiles, and birds. In the mammalia, the part which in birds constitute all the cerebellum, only forms the middle or fundamental part, since on each side there exists a lobe more or less complicated, but always symmetrical with its other half. Consequently, the cerebellum of the mammiferous animals is, like the brain of the class of double organs.

“It was in these diversified and complicated masses that it was necessary to seek for the point of departure of irritation, and the place of arrival of sensation; it was of their respective coöperation in the acts of volition, that it was necessary to be assured, and it is this which M. Flourens has endeavoured to obtain.

“He has first examined, how far we can go back to produce efficacious irritations on the muscular system, and he has found a point where these irritations remain inert; taking then the brain at its opposite part, he has irritated it more and more deeply, so long as it did not act upon the muscles; and when action commenced, it was found to be in the same place where its action was arrested in ascending. This place is also the same where the sensation of excitations, transmitted to the nervous system, is arrested; above this, punctures and wounds excite no pain.

“Thus, M. Flourens has pricked the hemispheres without producing either contraction in the muscles, or an appearance of suffering in the animal. He has removed them by successive slices; he has done the same with the cerebellum. He has removed at the same time, the hemispheres and the cerebellum; the animal continued insensible to suffering; the *corpora striata* and the *ophthalmic couches* were operated on and removed in a similar manner, without producing any different effects.

“There did not even ensue a contraction of the iris, and yet it was not paralyzed by the operation.” Dr. Spurzheim and myself, seeing so much contradiction

and doubt, in the experiments cited by Duverney, Gautier, Kaw-Boerhaave, &c., came to the determination to make similar experiments, the results of which I have already announced, Vol. II., p. 83, and the Phrenology of Dr. Spurzheim, p. 8. If we remove the greater part of the two hemispheres of the brain, and the greater commissure, to the cavities, in hens or pigeons, these animals still manifest distinctly, that they see and hear; but they would not take the food that was put before them, yet if bread was forced into the throat, they swallowed it. Rabbits, mutilated in the same way, have run, seen, heard, and even voluntarily taken nourishment. A considerable lesion of the cerebellum itself, does not injure the functions of the senses and animal life any more than the destruction of the superior parts of the brain proper; but if these lesions penetrate to the two great apparatus of supply (*renforcement*), the corpora striata, or the optic couches, or still farther, to the great commissure of the cerebellum (*Pons-Varolii*), convulsions and death ensue.

We concluded, from these experiments, that the whole of the brain was not necessary for the functions of the senses; but they by no means determine whether a portion of the brain, and what part of this organ, is indispensable to enable the functions of the senses to take place, with the consciousness of the individual.

Here, then, are results entirely different from those obtained by M. Flourens. In truth, I cannot understand how the whole brain and cerebellum, with the optic couches and the corpora striata, can be removed without interfering with the medulla oblongata, &c., and thus exciting convulsions and death, without mentioning the consequences of an inevitable and profuse hemorrhage.

“But when he pricked the *tubercula quadrigemina* there was observed an incipient trembling and convulsions, and these increased in proportion as the injury extended further into the *medulla oblongata*. The

wound of these tubercles, as well as that of the optic nerve, produced strongly marked and prolonged contractions of the iris."

In reading this passage, I anticipated the conclusion that the lesion of these tubercles would not excite convulsions more constantly than the lesion of the hemispheres. For they are ganglions implanted in the superior extremity of the *medulla oblongata*, and not its continuation. MM. Fodera, Fossati, and myself, have injured and removed the anterior pair of tubercles, but with the precaution of leaving the subjacent *medulla oblongata* untouched; rabbits have not experienced the least convulsion. But, when the lesion is made farther forward, the animal is seized with strong and rapid convulsions.

These experiments agree in result with those of Larrey, printed in the third volume of the journal of foreign sciences. (*Savans étrangers.*)

"Neither the irritations of the brain, says this physician, nor those of the *corpus callosum* itself, produce convulsions; we can even injure it with impunity. The only one of all the parts of which the brain is composed, which has appeared uniformly and invariably to excite convulsions, is the *medulla oblongata*. It is this which produces them to the exclusion of all the other parts.

"They contradict those of Haller and Zinn, in all which concerns the cerebellum; but from what M. Flourens has seen and enabled us to see, it appears since that these physiologists have touched the *medulla oblongata*, without being aware of it.

"In his language, M. Flourens concludes that the *medulla oblongata* and the tubercles are irritable; which, in ours, means that they are conductors of irritation, like the spinal marrow and the nerves; but neither the brain nor the cerebellum have this property. The author also concludes, that these tubercles form the continuation and the superior termination of the spinal marrow and *medulla oblongata*; and this

conclusion is in conformity with their anatomical connexions and relations.

“Wounds of the brain and cerebellum are no more attended with pain than they are with convulsions; and, in common language, one would conclude from this, that they were insensible. But M. Flourens, on the contrary, concludes that they are the sensible parts of the nervous system; which simply means that the impressions, received from sensible objects, must affect these parts to enable the animal to experience a sensation.

“M. Flourens seems to have proved this proposition so far as the sensations of seeing and hearing are concerned; when the cerebral lobe of one side of an animal is removed, he no longer sees with the eye of the opposite side, although the iris of this eye preserves its mobility; when both lobes are removed, he becomes both blind and deaf.”

M. Fodera has had the kindness to repeat these experiments with MM. Darnecy, Fossati, Londe,orget, and myself. I will relate, what we have observed to take place in pigeons and rabbits.

The first two rabbits from which the central and superior parts of the cerebellum were removed, died in three or four minutes. The hemorrhage as well as the convulsive motions were considerable. The section was made from above downwards. On one the medulla oblongata was reached by the instrument, and tetanic convulsions ensued.

The same operation was performed on a third rabbit. He manifested an air of astonishment; rose on his hind legs, moving backward, drawing his head constantly in the same direction, jumping up on his hind legs twice to the height of more than a foot and a half. When his leg was pricked he quickly drew it back. By degrees all the centre and a portion of the hemispheres of the cerebellum were destroyed; the fatal symptoms multiplied as the destruction progressed.

The first pigeon, whose cerebellum was destroyed,

like the preceding rabbit, drew his head backward strongly, sometimes advancing and sometimes receding.

The second pigeon, quite young, carried his head backward, and stepped forward and backward, even after the cerebral hemispheres were removed.

The third pigeon, after the same operation, appeared at first completely stupefied, with tetanic contraction and very strong convulsions.

The experiment was repeated on a fourth rabbit, the superior part of the ventricle was destroyed, with the exception of the optic couches and the *corpora striata*; complete stupor ensued for some time; the animal then moaned piteously, and ran forward with violence. The *corpus callosum* was then destroyed; the animal then became quiet; he ran forward when irritation was applied. The optic couches and the *corpora striata* were then destroyed; the animal supported himself on his feet, moving forward.

Here again are very different results from those of M. Flourens, and they will always vary, according to the irritability and age of the individual, and the kind of instrument with which the experiment is performed; that is, whether it is dull or sharp.

In general, it is hardly possible to perform precisely the same operation two or three times in succession, and always obtain the same results. Many other experimenters have slaughtered a vast number of pigeons, rabbits, dogs, &c., and there has always been the same inconsistency and the same uncertainty, in the appearance of the phenomena. Nothing is more common than convulsions, occurring as the immediate consequences of lesions of the cerebellum, in birds and mammalia. Here, in speaking of the tubercles, we can, with much more reason say, that their connexions and anatomical relations with the *medulla spinalis* and *oblongata*, explain these convulsions. These experiments, then, at least in many cases, in no way contradict the experiments of Haller, Zinn, &c.

But, we do not find, that he has proved this, as regards the other senses, equally well. First, he has not,

neither can he perform any experiment relating to the senses of smell and taste ; then, as to touch, even his experiments do not appear to us conclusive. In truth, the animal thus mutilated, assumes a stupid air, and acts no longer from his own volition ; but when he is struck or pricked, he assumes the appearance of an animal just awaking. In whatever position he is placed, he preserves his equilibrium ; if he is put upon his back, he quickly turns himself ; if he is pushed, he walks. If it is a frog, he hops when touched ; if a bird, he flies when tossed in the air ; when held, he struggles to escape ; if water is poured into his mouth, he swallows it.

Without doubt it would be difficult to believe, that all these actions are brought about without being incited by any sensation ; it is true, that they are not in consequence of an effort of reasoning. The animal escapes without an object ; he frequently falls against the same obstacle ; but that proves, at most, and these are the expressions of M. Flourens, that such an animal is in a state of sleep, or acts like a man asleep. But we are also very far from believing, that a man who sleeps, who moves himself in sleep, who knows how to take, in this state, a more comfortable position, is absolutely deprived of sensation ; and that he has had no distinct perception of it, and that he has not preserved the memory of it, is not a proof that he has not had these. Thus, instead of saying, like the author, that the cerebral lobes are the sole organ of sensation, we ought to restrain ourselves to well-observed facts, and limit ourselves to saying that the lobes are the sole receptacles, where the sensations of sight and hearing can be realized and become perceptible to the animal. That, if we should wish to add still further to this power, we should say, that in these lobes, all the sensations assume a distinct form, and leave permanent traces and enduring recollections ; that, in a word, they constitute the seat of memory, a faculty by means of which the animal is furnished with the materials of its judgments. This conclusion thus

reduced to its precise terms, will become the more reasonable; for, besides the probability which the structure of these lobes and their connexions with the rest of the system, give to it, comparative anatomy affords another confirmation, in the constant proportion of the volume of these lobes to the degree of intelligence of the animals."

As to the opinion of Cuvier, I request the reader to peruse again, what I have said in the second volume, where I have exposed the reasons which seem to prove that other nervous systems, entirely independent of the brain, can also produce spontaneous motions and sensations.

Baron Cuvier seems to admit, that the seat of memory is exclusively in the brain, and to explain the judgment by the materials furnished by the memory. Has he considered the different species of memory? Can he explain, by memory, the varied and opposite talents, instincts, propensities, so multiplied in the different species of animals? Is the power of judgment in proportion to the strength of memory? No; so long as physiologists shall continue to follow old systems of philosophy, all their researches relative to the functions of the cerebral parts, will continue without any definite object or practical result.

"After having studied the effects of ablation of the brain, properly so called, M. Flourens examines those which ensue from the extirpation of the tubercula quadrigemina; the removal of one of them, after a convulsive motion which soon ceases, produces, as a permanent result, blindness of the opposite eye and an involuntary rotatory motion of the head; that of both tubercles, brings on complete blindness, and the motion of the head is more violent and longer continued. Still the animal preserves all its faculties, and the iris continues to be contractile. The entire extirpation of the tubercle, or the section of the optic nerve alone, paralyzes the iris; hence M. Flourens concludes that the ablation of the tubercle is attended with the same

results as the section of the nerve would be ; that this tubercle is only a conductor of vision, and that the cerebral lobe above, is the ultimate limit of sensation and the place where perception takes place.

“ It only remains to be remarked, that, in extending too deeply this extirpation of the tubercles, the *medulla oblongata* becomes involved, and that violent and long continued convulsions then ensue.”

M. Flourens was very near admitting, that the tubercles are not always irritable. When he says that the animal preserves all its faculties, of what faculties does he intend to speak ?

“ In the experiments of M. Flourens, what appears to us most curious and novel, relates to the functions of the cerebellum.

“ During the ablation of the first slices, there only appeared a slight debility and want of harmony in the motions.

“ As this slicing proceeded, an almost general agitation manifested itself ; the animal, although he saw and heard, only performed certain rapid and irregular motions.”

“ The power of flying, walking, and standing upright was lost by degrees.

“ When the cerebellum was cut off, this power of performing regular motions entirely disappeared.

“ When the animal was placed upon his back, he made no attempts to turn himself ; yet he saw the blow with which he was threatened, he heard cries, he sought to avoid danger, and made a thousand efforts to do it without succeeding ; in a word he preserved his faculty of perception and his volition, but he had lost the power of rendering the muscles subservient to the will ; hardly did he succeed in his attempts to stand upright by supporting himself on his wings and tail.

“ By depriving him of his brain, he was put to sleep.

“ On depriving him of his cerebellum, he appeared to be in a state of intoxication.

“ It is surprising,” says M. Flourens, “ to see a pigeon,

in proportion as he loses his cerebellum, gradually lose the faculty of flying, then that of walking, then finally that of standing upright ; this takes place by degrees. The animal at first loses the power of keeping his balance, then his feet are unable longer to sustain him. Finally, every fixed position becomes impossible for him ; he makes incredible efforts to retain some fixed point, but does not succeed ; and still, when exhausted with fatigue, he seemed to take some repose, his senses were so much on the alert, that the least gesture caused a recommencement of his contortions, without the appearance of the least convulsive motion, so long as the medulla oblongata and tubercles remained untouched.

“ We do not recollect that any physiologist has published any thing, which resembled these singular phenomena. Experiments on the cerebellum of quadrupeds, and especially those that are full grown, are very difficult, on account of the extensive portions of bone that it is necessary to remove, as well as the great vessels that are opened. Besides, most experimenters operate from some previously conceived theory, and are a little too apt to see what they wish to see ; and certainly no one had doubted that the cerebellum was, in some respect, the balance wheel, the regulator of voluntary motion in the animal. This discovery, if repeated experiments, with all proper precautions, establish its truth, will do the greatest honor to the young observer whose work we have just analyzed.

“ In conclusion, the Academy is as well able to judge as ourselves, that, independently of the superfluous mutations of language and known facts, which the author was obliged to reproduce in order to give a finished appearance to his work, this memoir presents more precise details than any which we before possessed, of many old facts, and that it also contains others which are as new as precious for science.”

The experiments of M. Flourens on the functions of

the cerebellum, are precisely those, which appear to me to present the greatest uncertainty, and are the least to be depended on; on this account I shall bestow more time on their examination than on the preceding subject.

It was said above, that M. Flourens removed the cerebellum by slices; that he removed it entirely, and that the animal remained incapable of suffering. Here it is said that, during the ablation of the first slices, some debility was apparent, and a want of harmony in the motions; when the middle slices were removed, an almost general agitation came on; the animal, though seeing and hearing, only performed rapid and irregular motions.

This want of harmony, this almost general agitation of rapid and irregular motions, why do they fear to call them convulsive motions? This is apparently feared, since then the results of M. Flourens would coincide with those obtained by so many other experimenters, and they would lose the merit of novelty.

Indeed, if the different cerebral parts existed in an insulated condition in the brain, without any connexion, if we could remove these without injuring their envelopes, without causing any hemorrhage, we might cherish some expectation of arriving to sure results by their entire ablation; but how can any one be so foolish as to attribute certain effects to the ablation alone of a part, which is so intimately connected, above, below, in its middle portion, with the *medulla spinalis* and *oblongata*, with the annular protuberance or pons Varolii, with the crura of the brain, with the tubercula quadrigemina; of a part, whose ablation or mutilation is impossible, without seriously affecting organs destined to the execution of spontaneous motions, and of the functions of many senses; of a part whose ablation is necessarily attended with a constantly increasing loss of blood? How can physiologists base their propositions on experiments so confounded, so complicated and varied in their nature and their effects; on experiments, which are either in

contradiction to those of other very expert experimenters, or which produce different phenomena every time they are performed, either on another animal, or by other physiologists?

Is it astonishing, that the animal successively loses the faculty of flying, standing upright, of performing regular motions, of raising himself up when he is gradually ceasing to live? But, you will tell me, the animal sees, hears, feels, he makes a thousand attempts to avoid danger; the power of volition still remains; consequently it is not to impending death that we ought to attribute this irregularity of motions. Go to the bed-side of the sick, and you will often see those who have not the strength to move their arms, to shut their eyes, to put out their tongue, and who see, hear, feel, and internally make a thousand vain efforts to manifest signs of life, without there existing sufficient reason to attribute these phenomena to the partial death of the cerebellum.

The pigeon, whose cerebellum we destroyed, still walked backwards and forwards. Does it not require regular exertions of the power of voluntary motion to walk backwards and forwards? And even in order that the pigeon should with difficulty support himself on his wings and tail, as happened in the experiments of M. Flourens, it requires regular motions.

Thus every thing serves to prove that the idea that the cerebellum is the balance wheel, the regulator of voluntary motion, is rather a singular idea than a true discovery.

“The integrity of the cerebral lobes,” continues the report, “is necessary for the exercise of vision and hearing; when they are removed, volition is no longer manifested by spontaneous acts. Still, when the animal is directly excited, he performs regular motions by means of this faculty, as though he desired instantly to end his pain and uneasiness; but these motions do not enable him to effect his object; very probably because his memory, which has disappeared with the

lobes which were the seat of it, does not continue to furnish a base or elements for his judgment. These motions have no connexion with each other for the same reason, because the impression, which has caused them, neither leaves a recollection or a durable volition. The integrity of the cerebellum is necessary to the regularity of the motions of this faculty; whilst the brain remains, the animal will see, hear, and have very evident and energetic volitions; but if the cerebellum is removed, he will no longer be able to maintain the equilibrium necessary for his locomotion. As for the rest, the irritability continues a long time in the parts without either the brain or the cerebellum being necessary to it. Every irritation of a nerve calls it into action in the muscles to which it is rendered; every irritation of the spinal marrow excites it to action in the members situated below the irritated point. It is entirely at the top of the *medulla oblongata*, where the *tubercula quadrigemina* adhere to it, that this faculty of receiving and of propagating, on the one part an irritation, and on the other pain, ceases. It is at this place, at least, that sensations must arrive in order to be perceived; it is also from this point that the orders of the will must depart; thus, the continuity of the nervous organ from this place to its several parts, is necessary for the performance of spontaneous motions and for the perception of impressions, either internal or external.

“All these conclusions are not identical with those of the author, and, especially, they are not related in the same terms; but they are those which have appeared to result the most rigorously from the facts which have been so well established. They will, without doubt, be sufficient to enable you to judge of the importance of these facts, to induce you to declare that you are satisfied with the author, and to invite him to continue to communicate to you the remainder of a work so full of interest.”

In our experiment on rabbits, M. Spurzheim removed a large part of the hemispheres, and these ani-

mals continued to see and hear, and already we had established as a fact, that the totality or integrity of the hemispheres was not necessary for the exercise of the functions of the senses.

Without tormenting the poor animals, we had already proved that a disease of one of the anterior tubercles produces either a disease or blindness of the opposite eye. See my large work, vol. i. p. 113.

Without these cruelties, Sæmmerring had already said: "We have seen an individual, in whom a wound penetrated to the *corpus callosum*, lose the use of the eye on the side opposite the wound, whenever the pus accumulated there, and this blindness disappeared the moment the pus was evacuated; hence the sensation of vision takes place in the brain." Passage quoted, vol. II. p. 70.

Finally the pretended results of the experiments of M. Flourens, but very rarely agree with the pathological facts observed in lesions of the cerebellum. I have related the history of René Bigot, in whom, in consequence of a sabre wound, the right lobe of the cerebellum was exposed through an opening of the dura-mater. *The slightest touch of this organ occasioned vertigos faintings, and convulsive motions*, without his manifesting the least sign of pain. The same individual lost the vision and hearing of the right side. In the *post mortem* examination, the right lobe of the cerebellum was found shrunken, and of a yellow color; the *medulla oblongata* and *spinalis* was of a dull white, of a firmer consistence than natural, and reduced to a quarter of their volume; the nerves emanating from these parts, appeared also in a state of atrophy. This analogous condition of the *medulla oblongata* and *spinalis*, with that of the cerebellum, proves that this last is immediately connected with these parts, and that the lesion of the one influences the other. How then can we insulate the cerebellum and attribute to it, that which equally belongs to the diseased conditions of the parts connected with it?

Blindness or the changes of vision, which so often supervene upon diseases or lesions of the cerebellum, are explained by the connexion and the proximity of the cerebellum with the tubercles; the same connexion explains also the vivacity of the countenance, the fire or the languor and dejection of the eyes, in concupiscence, or after the satisfaction of venereal desires.

The wounded man, Augustus François, experienced sharp pains in the occiput, heaviness and numbness in the lower limbs, and so great a weakness of sight and hearing, that he could hardly distinguish the largest objects or hear the most acute sounds.

Boyer, in his *Treatise on Surgical Diseases*, vol. v. p. 78., cites an observation of Lapeyronie, and another fact reported by Petit, of Namur, which seem to prove that the lesion of the cerebellum, whatever may be the cause producing it, gives to the body an extraordinary vivacity of sensation. In the observation of Lapeyronie, the patient was a man whose intelligence was not in the least affected, and whose physical sensibility was very active. On opening the head the cerebellum was found to be a mass of tubercles filled with pus. The observation of Petit is still more precise. A soldier received a musket shot wound; the ball had traversed the left part of the cerebellum and penetrated to the posterior lobe of the left hemisphere of the brain. During the forty-three hours that this soldier lived, his judgment was sometimes good; he answered at this time whatever was asked him, but generally he was delirious; he was constantly in agitation, turning in bed from one side to the other, with his arms and legs in constant motion. Sensation was so acute in the whole of his body, that, at the least touch, he drew back the part on which the fingers were placed, as if he had been cut or burnt. This is a new proof of the immediate influence of the cerebellum on the medulla oblongata and medulla spinalis, and all the nerves which derive their origin from these parts. In consequence of the phenomena of

this wound, Petit made experiments on living dogs, and although in most of these animals, the lesion of the cerebellum was accompanied with an augmentation of the sensibility in all the parts of the body, Petit, notwithstanding, avowed that these experiments only excited doubts, which furnishes a further proof how variable and uncertain in their effects, are those lesions which are made designedly, and that they ought to be extended and multiplied, when the injury of the cerebellum is so great, or has continued sufficiently long, to transmit its irritation to all the neighbouring parts with which it is connected, to the *medulla spinalis* and *oblongata*, the *tubercula quadrigemina*, the auditory nerves, the first great ganglion of reunion (the *pons Varolii*), the great nervous fasciculi, (*crura cerebri*), the second and third great ganglions of reunion (optic couches and *corpora striata*), and thence to all the nervous mass of the hemispheres.

So also the irritations of any parts whatever of the hemispheres, or of the whole hemispheres may be successively transmitted to the inferior parts with which they are continuous. There is not a physician or physiologist, who cannot call to mind a great number of facts in support of this assertion.

How frequently do the lesions or diseases of the brain and its coverings, contusions, concussions, compressions, extravasations, excrescences, cancers, hydatids, inflammations, suppurating cavities, the seats of which are apparently solely limited to the hemispheres, produce the most general and alarming symptoms, the loss of the external senses, of sensation and the faculty of motion, of severe pains, partial and general convulsions, &c.

Let any one now determine what degree of confidence the prudent physiologist may give to the pretended results, obtained by mutilations and violent ablations of the cerebral parts, especially when it is required to determine the special functions of an organ, so much irritated and so intimately connected with other organs.

With the exception of the influence, that the lesions of the cerebellum exercise on the medulla oblongata and medulla spinalis, there exists, neither in the state of health, nor in that of disease, any relation or proportion, between the cerebellum and the regularity of the motions of the faculty of locomotion. Animals deprived of the cerebellum still regularly exert this power. The cerebellum of fishes, reptiles, and birds, is less complex than that of the mammalia. Have these last more regular or active motions of this faculty than the former? What relation is there between the successive development of the cerebellum from the moment of birth up to the twentieth or thirtieth year, and the regularity of these motions? Are the movements of the man at twenty or thirty years of age, more regular than those of the boy or girl, from five to sixteen years? Has it ever been proved by experiment, that individuals with a large cerebellum, have more regular motions than those, with a small one? Do women, who generally have a smaller cerebellum than men, walk and dance with less regularity, art, or grace than men? Does mutilation, which has such a powerful influence on the condition of the cerebellum, produce a derangement of the regularity of these motions? What connexion does the influence of the lesions, or the diseases of the cerebellum, or the genital parts, have with the regularity of motion? What have the painful tensions and heats of the back of the neck, apoplexies of the cerebellum, so often associated with the sexual functions, in common with the regularity of these motions? By the hypothesis of M. Flourens, neither of these questions is resolved. On the contrary, they are all answered, if we admit the cerebellum as the organ of the propensity for sexual union.

Why should we admit any other organ for the *regularity* of voluntary motion, than the organs for this motion itself? Would it not be absurd to admit some organs for the vision and hearing, and others

for the regularity and irregularity of these two functions? For the same reason it is sufficient to explain the irregularity of the motions of this faculty, to say that the organs of voluntary motion, the medulla spinalis and oblongata, may be irritated, injured, troubled, &c.

In order to admit, that the cerebellum regulates the motions of this faculty, it is necessary that a certain proportion should exist between the cerebellum, and the power, the quickness, and the regularity of these motions. Comparative anatomy does not support this idea. But this proportion between the medulla oblongata and medulla spinalis, and the nerves that are derived from them, exists throughout. The power, the agility, and the regularity of the motions of the tiger, the hare, the alligator, the boa, &c., are in proportion to the size of their organs, and not to that of their cerebellum, which in them is much smaller than in man.

We will further add, that the phenomena excited by these lesions, vary at different ages in different individuals; and they never justify any application from the fish to the reptile, the reptile to the bird, the bird to the mammiferous animal, or this last to man; that consequently these lesions can never supply sure and useful facts, either for physiology or human pathology; and that, finally, all these cruel mutilations have no other merit than that of vain curiosity.

II. *Love of Offspring.*

Nature, by another organ, secures the existence and prosperity of beings, procreated in consequence of the instinct of propagation. In all animated nature, there is manifested an imperious propensity to preserve and cherish offspring; we admire it in the insect, and it commands our veneration even in the tigress.

How happens it, that, to this day, neither philosophers nor physiologists have made any serious re-

searches in relation to this propensity? No one has endeavoured to discover the origin of this preserving instinct; no one has examined why this propensity differs in its manifestation, in different species, in the two sexes, and in different individuals. Does it result from the organization taken collectively, or does it depend on an isolated part? These are questions, which no one, before myself has examined. Ought it then to be a matter of astonishment, if, when I teach that this instinct is innate in man and other animals, that it is a fundamental and peculiar quality, and that it has its seat in a particular cerebral part, the idea should be deemed ridiculous, and at variance with common sense?

But, I will lead my readers by the same route, that nature has conducted me; in this way they will themselves discover this truth, which heretofore has seemed to them devoid of probability.

*History of the Discovery of the Love of Offspring,
as a Fundamental Quality, and of its Organ.*

On comparing with indefatigable perseverance various forms of heads, I have observed that, in most of the heads of females, the superior part of the occipital bone recedes more, than in the heads or crania of men. Let any one compare the crania of men (Pl. xxx. xxxix.) with the cranium of a woman (Pl. lvi.). As this prominence of the superior part of the occipital bone is evidently produced by the brain, it follows that the subjacent cerebral part is, in most instances, more developed in woman than in man. What was then more natural than the idea, that this cerebral part might be the material cause of a faculty or quality, manifesting itself in a greater degree in woman than in man?

But what is this quality, or this faculty?

There is not the least shadow of evidence, that the

love of offspring has ever been considered as a primitive power, a fundamental propensity; still less, as being produced in the organization, by a particular organ; and least of all, that any one should have believed, he could find this organ in the brain. For many years I have had different opinions, which I have successively discarded, on the difference in the form of the head in man and woman. In the conferences that I have held with my auditors, I have often spoken of my embarrassment on this subject. I observed finally, that the crania of monkeys, as far as this prominence is concerned, have a singular analogy with the crania of women. I concluded from this, that the cerebral part, situated immediately under this prominence, was very probably the organ of a quality or faculty, that women and monkeys equally possess in a high degree. I pursued with the more ardor this idea, because, from the organs I had already discovered, I was sure, that this region was not the seat of any superior intellectual faculty whatever. I more than once reflected, in my own mind, on the qualities and faculties that I knew were possessed by monkeys; finally, in a favorable disposition of mind, during the delivery of my lecture, I was struck with the extreme love that these animals have for their offspring. Impatient of comparing instantaneously the crania of male animals, in my collection, with all those of females, I requested my class to leave me, and I found, in truth, that the same difference exists between the male and female of all animals, as existed between man and woman. This new idea appeared to me as much the more plausible, as the organ of this instinct is found placed very near that of the instinct of propagation. What could be more in conformity with the order of nature?

Before presenting the proofs in favor of the existence of the organ of the love of offspring, I shall give an abstract of the history of this instinct, both in animals and in man. This sketch will be sufficient to

convince my readers, that it should be considered as a true fundamental instinct, as a particular primitive quality.

Natural History of the Love of Offspring.

Most insects, fishes, and amphibious animals, seeking to preserve their eggs from accidents from without, lay them in a place which facilitates the egress of the young, and where they are enabled to find food. Their solicitude for their young extends no farther.

In some of the species of these animals, the care that they take of their offspring even goes beyond this. Certain species of spiders carry their eggs in a little sack on their back, which they never part with except in the most pressing emergency, and which they immediately resume when the danger is passed. All those, who have once in their lives destroyed an ant hillock, must have seen, with what earnestness the ants collect their eggs and larvæ, to replace them in a place of safety. Wasps and bees, that at all other times permit us to observe them without manifesting anger, become dangerous to those who approach them in the season of their young. Who does not know with what indefatigable activity they nourish them, and with what courage they defend their young bees, with what anxiety they lick and caress them from the moment when they come out of the cells? We find also in birds, this tender affection for their young. The more they are taught, by sad experience, the dangers that threaten their young, the greater pains do they take in building secure nests, and in concealing and protecting them. After having with perseverance covered the eggs and hatched out the progeny, the parents nourish them with extreme tenderness; their watchful love foresees all the accidents which may happen to them, instantaneously gives them notice, and induces them to remain still and conceal them-

selves, or conducts them to a safe place. When the parents perceive that their brood is threatened, what anxiety, what alarms do they manifest ! what stratagems do they put in operation to deceive the bird of prey, the serpent, the weasel, or man ! and when we succeed in robbing them of their offspring, what painful cries, what stubborn resistance ! Sometimes uttering plaintive accents, they follow the robber for considerable distances, to the very place where he deposits them, which they do not quit until they have lost all hope of recovering them ; even hunger cannot oblige them to quit them in the moment of peril ; often, even after long continued cold and humid seasons, we find the males and females dead, covering their young, victims also of the cold.

In the mammalia, also, the love of offspring is the most active and imperious of all the instincts. The mother observes with solicitude and anxiety every thing, which may become dangerous to her offspring. When the fox, the cat, the squirrel have the least indication that their habitation is discovered, they instantly abandon it, and conceal their young in another retreat. Animals of prey, however wild they previously had been, and with whatever caution they have concealed themselves in the vicinity, become rash when they have young to provide for ; no danger stops them ; they enter the gardens without caution, the poultry yard, the dove cot, &c. When all the outlets of a borough are furnished with snares, the foxes, when they have no young, keep shut up for fifteen days, until there only remains the alternative of dying of hunger or falling into the trap. But when they have offspring, the cruel hunter knows too well that the mother will not long resist their groans, and the father also, after having exhausted all the means of safety, will soon become the victim of his tender love for his progeny. Cats nurse the young of which the mother is sick or dead. With what earnestness does the bitch implore the pity of her master, who takes

from her one of her young? The hind and the female roebuck forget that they are unarmed, and rashly precipitate themselves on the enemy, when they are compelled to save or defend their fawns. With what fury does the wild sow defend her young! How formidable do animals of prey become, when they seek food to appease the hunger of their offspring!

Finally, who is there that forgets this admirable propensity in the human species? From the most tender age, nature begins to teach the woman the part of the mother, and makes her pass through the different degrees of instruction to prepare her for her future destiny. Observe this little girl, so seriously occupied in playing with her doll. She dresses it, undresses it, decks it in fine clothes, feeds it, gives it drink, prepares its night linen, puts it to bed, takes it up often, caresses it, gives it its lesson, scolds it, threatens it, and tells it stories. In this way she spends the whole day, weeks, and even months with her dear doll. It is with hearty good will also, that she assumes the care of her younger brothers and sisters. She feels, more acutely than they, their pleasures and their sorrows. Hardly does a new desire arise in her heart; nothing in the world has greater value or more charms in her eyes, than babies. Where is the father, or the mother, who does not call to mind with rapture the time, when, being single, they hoped soon to be married? And when the early indications attest that the union has not been sterile, what joy! what mutual felicitations! what plans for the future! Some young women experience especially an inexpressible delight, when they first perceive the movements of the living infant within them. The young wife becomes the object of the busy cares of the whole family; all await the decisive moment with impatience, mingled with anxiety! Is there any happiness purer than that which is depicted in the looks of a mother, watching with tenderness the wants of the infant, that she presses to her bosom? What duty is there more respectable and more sacred than

the cares, which parents take of the precious pledge of their love? If I had a city, there should arise in its centre an emblem of domestic happiness; a mother nursing her infant. Every time that a grandmother sees her grandchildren, or, her great-grandchildren, the sentiment of maternity comes again to her heart, and this benevolent instinct acts still, when all the other propensities are almost entirely extinguished within her.

Every sacrifice, the least action performed for the safety of a child, or, to administer to its happiness, deeply affects us; all, which discloses the heart of a barbarous mother, fills us with indignation and horror; every injury, inflicted on feeble infancy, or on a pregnant woman, or, a nursing mother, revolts us.

The interest, which infancy commands, influences even the judges in favor of criminals. Galba Sergius, though accused of the assassination of thirty thousand Lusitanians, and on the point of being banished, was absolved by the people, who were moved to pity, because, shedding tears, he pressed to his bosom two children of tender age.

Reflecting on all the circumstances that characterize the love of offspring, it is impossible to deny that it is an innate instinct, and intimately inherent in the organization.

In order to be convinced by the surest evidence, that the love of offspring is an innate and particular instinct, let us follow it in its different manifestations in the different species of animals, in the two sexes, and in different individuals.

In many species, the male, have little or no love for the young; such as the bull, horse, stag, wild boar, dog, cock, &c. In these species the love of offspring appears to belong exclusively to the females. It is very rare to see a dog bring food for his female companion with young.

In other species, on the contrary, the male and female equally love their young, and take care of them

in common. This particularly takes place in those where nature has established a marriage as durable as life; for example, in the fox, wolf, marten, pole-cat; in almost all birds, such as the stork, swan, swallow, blackbird, nightingale, (green finch,) sparrow, pigeon, &c. In these species, when the female dies, the male continues to cover the eggs and nourish the young. When both are alive, they generally cover the eggs alternately, and take care of the young in common.

Still, even in these species, it is observed that the female is more powerfully influenced by this instinct than the male. In cases of imminent danger the father escapes rather than the mother.

In each of these two classes again there exist differences between one individual and another. There are cows, mares, bitches, which submit with indifference to the loss of their young; some females even abandon them entirely as soon as they are born. Generally, pigeons, the male as well as the female, cover their eggs carelessly. They often let them get cold; frequently they crush them; sometimes they abandon their nest for the slightest cause; and when their young are taken from them, they do not manifest much sorrow. *Le Râle des Genets*, called the *king of quails*, sets with so much assiduity, that oftentimes the bird is beheaded by the sickle of the reaper. When the building in which there is a stork's nest takes fire, the parents precipitate themselves into the flames, rather than abandon their young.

The female of the silver rabbit and hamster neglect their young, and sometimes devour them, even when they do not want food. Nothing is more original than the idea of M. Virey, when he maintains that the females kill their young from maternal affection, when they have no milk. Let him but take the pains to compare the heads of such cruel mothers, among rabbits, sows, and women, with the heads of good mothers of the same species, and he will find the true cause. Other females are inconsolable for such a loss, grow

lean with sorrow, and utter lamentable cries. I have seen bitches seek their young for many months, with the most unwearied anxiety; they attack with fury all those whom they suspect of having taken them away, and overwhelm with plaintive caresses, those who they believe are able to restore them; when they find all their hopes disappointed, they fill the air with their continued howls. Some mares have such a passion for colts, that they lead away those of other mares, and take care of them with jealous tenderness.

In the different species, maternal love manifests itself still under different modifications. The female of the silver pheasant singularly loves her young; and on this account the nest and care of the young speckled hens are confided to her, in preference to the old hens. Some females have only an affection for their own young, and hate those of other females of the same species. The female partridge manifests the greatest tenderness for her own young, but destroys those of others. The hen pheasant (common) on the contrary, shows much less affection for her own young, and abandons, with apparent indifference, those that have wandered away; but she receives with joy and takes under her protection young pheasants, that are strangers to her.

Some animals live a long time with their young, and constitute a family; others quit them, as soon as they can do without assistance.

There are numerous families of insects, of amphibious animals, and of fishes, the males and females of which, do not trouble themselves about their young. Among birds, the cuckoo is entirely a stranger to the love of offspring. All her care for her posterity is confined to the preservation of her eggs, which she deposits in the nests of other birds, whose eggs she either eats or carries away. The masters of these nests, always smaller than the usurper, not only hatch out the eggs of the cuckoo, but still nourish,

with indefatigable complacency, the voracious young cuckoo. When any one takes him from the nest and places him in an aviary with other birds, or exposes him in a garden, all the birds around seem anxious to adopt him. I have frequently caused them to be raised by a wren; it was a pretty sight to see the adopted father mounting on the shoulders of the young cuckoo to introduce food into his mouth.

Man constitutes a part of that class, in which the male and the female love their young and take care of them with common accord. Notwithstanding this, the woman very much exceeds the man in this respect. This instinct is manifested in infancy; the little girl reaches out her hand for the doll, as the boy, for a drum or sword. When we wish to have a child taken care of, we call a servant girl and not a valet. Females who do not wish to marry, or those whose marriage is sterile, often adopt the children of others, in order to bestow upon them those cares which nature imposes on the mother. The whole physical constitution of woman combines with her moral and intellectual character, to prove to us that she is destined, more particularly than man, to take care of children.

These striking differences, in the manifestation of the love of offspring, strongly prove, that it is not a voluntary or factitious propensity, but an instinct resulting from organization, varying like it, but always natural and innate. Before entering into details relative to the cerebral part on which it depends, I shall advert to the opinions of some authors on the subject.

Opinions of Philosophers on the Causes of the Love of Offspring.

The manifestation of the love of offspring is a phenomenon of such daily observation, that, on this very account, no one takes notice of it. Whenever, in my youth, I inquired the cause of similar manifestations,

I was taken for a very singular man. It is natural, replied they to me, and my inquiry was terminated. But why is it natural? How has nature imprinted this instinct in animals? Has she not been obliged to appropriate a part in the organization, by means of which this instinct not only becomes natural in man and animals, but becomes also in them a want and a passion, which, at the same time that it procures for them great pleasures, provides for the preservation and the education of their feeble offspring?

Others would endeavour to satisfy me by speaking of *instinct*. In general, it is by *instinct*, as we have so often seen, that every thing in animals is pretended to be explained, as, in man, every thing has been accounted for, by will and intellect. But again, instincts also ought to derive their source from the organization. They are very different among themselves, sometimes even opposite to each other; they are developed at very different periods of life; such an instinct exists without another, &c.* All the instincts cannot, then, be collectively considered under the same denomination, nor be derived from the same source. Naturalists only follow natural deduction, when they endeavour to seek a particular cause for a particular effect.

“A mother,” say they, “does not love her infant because she has a protuberance; she loves her child because it makes, or has made, her happiness; she loves it because it is a part of herself, because it is a part of the man who is or has been dear to her; she loves it because it resembles her, or at least she thinks so; she loves it because it is her work; she loves it from the pride she has in being a mother; she loves it from the dangers she has been exposed to on its account, from the pains it has caused her; she loves it because it is feeble and requires her aid; she loves

* See what I shall say in another volume in treating of instinct *ex professo*.

it because she has felt it within her, and because she has heard proceed from its lips the sweet sound of mother ; she loves it, finally, from duty, from virtue, from habit, if you will, when there have not been other reasons sufficiently powerful.” *

It certainly is not to such causes as these, that the Creator has confided the life and the well-being of children and the young of animals. He has provided better for their safety. Let any one examine the hearts of tender parents, and let him read there, whether their love for their children is determined by such artificial motives ; if they can possibly do otherwise than love them ? Do we not find examples of this tender love in the most degraded individuals, in the most savage nations, in a word, under circumstances where most of the motives above mentioned do not exist ? Finally, in all these assertions, we entirely forget insects, amphibious animals, birds, the mammalia, terrestrial as well as aquatic, the natural history of which affords thousands of examples of this strong love of offspring. Let any one read the natural history of the ape, lion, sea-horse, or any domestic or wild animal whatever ; every where he will find the most convincing proofs, that in the animal species, the love of offspring is an invariable propensity, essentially inherent in their nature.

It is true, that we may be sometimes tempted to doubt, whether, in the human race, the love of children is an inherent propensity. With what repugnance do not certain women observe the first development of the fruit of their womb ! with what indifference do they not place in mercenary hands their new-born infant !

I have said, in another place, † that sometimes, both in animals and the human species, there are instances, where, from the want of development in its organ, this

* Journal of the Empire. The same objections have been made in the 21st volume of the Dictionary of Medical Sciences, page 210.

† Vol. I. § 5.

propensity is hardly manifested, and where this kind of insensibility is a natural condition.

Too often, I am aware, powerful reasons exist, which compel a woman to renounce the nursing of her child, and in such cases, I sincerely pity the mother. But much oftener the husband and the wife consent, from the slightest motives, to have their child nourished by a stranger's milk, at the risk of absorbing fatal miasmata, of which innumerable children become the victims, as well in the country as in cities. It is imagined, that the woman who fulfils her duty to her child loses certain charms; the cares of nursing, say they, are incompatible with the business of a wife who has a family to manage; but a much more powerful motive, as also more culpable, is, that the cares of nursing are incompatible with the pleasures of dissipation. It is difficult to conceive, why the writings of philanthropists have not made governments more scrutinizing in the matter of so great an abuse, in order that they might hold up to public contempt these unnatural mothers.

But if it is true that we can repress the instinct of propagation and the love of offspring, the most universal and imperious of all the propensities, it is a new proof against those, who pretend to infer the irresistibility of actions from the innateness of the propensities and the existence of their material organs. The love of offspring, say some, neither merits recompense nor admiration. Immediately after accouchement, the breasts and the nipples are distended with milk, so much so as to give the mother pain; nursing becomes a matter of necessity; the child or the young animals, by sucking, give ease to the mother; this is sufficient to cause the mother to love them. After the objection that M. Delfit has made to the instinct of propagation in the *Dictionary of Medical Sciences*, Vol. xxxviii., page 267, he continues; "It is the same also, without doubt, with respect to the love of mothers for their offspring, considered as an instinct, or what is truly animal, and

making abstraction of all ideas or moral habits which may be connected with it. It is proved by constant observations, that this immediate affection belongs essentially to the dispositions of the womb, or the interior of the organ secreting the nourishing fluid; hence arises the necessity for nursing and the pleasure that attends it. How can we transport to another place, and to a particular cerebral division, the seat of a similar affection? ”

How can any one be so ignorant in natural history, and especially in comparative physiology, so fruitful a means of enlightening the philosophical physician on the functions of our race? Where are those constant observations which prove that the love of offspring belongs essentially to a disposition of the womb, or the interior of the secreting organ of the nourishing fluid, &c.? As soon as the infant or the young animals have quitted their parent's womb, and a long while before the breasts are distended with milk, the mother warms, dries, and licks them with tenderness. If among them she finds one dead, she turns him every way with the expression of the most melancholy feeling, and often preserves him many days. What need of nursing have bees, ants, birds, and the males of those mammalia, where the two sexes divide the care of the young, as man, the fox, the marten? So much for the most constant observations!

“Maternal love,” says Richerand, “surely is not the result of any intellectual combination, or cerebral action; it is in the *bowels* that it derives its source; it comes from them, and the greatest efforts of the imagination cannot produce it in those, who have not enjoyed the happiness of being mothers.”*

No; it certainly is not the *result* of *any intellectual combination*. But Richerand also would deny that the *sentiments* are an operation of the brain. The whole natural history of woman, from infancy to decrepitude, refutes his gratuitous assertion. How

* New Elements of Physiology.

often, I repeat it, do we not see women, who have never desired or never been able to become mothers, adopt the children of others, and bestow upon them the most tender cares?

The love of offspring is active in animals, even before they have brought forth young. Birds, the mouse, the squirrel, and a hundred others, prepare beforehand a nest or lodging place.

If the love of offspring, say my adversaries, were the effect of an organ, it ought to be evident at all times; but we observe nothing of this in animals when they have no young.

But I have shown in many parts of this work, while speaking of other instincts or propensities, that the reason why they do not always manifest themselves, proves absolutely nothing against their innateness. The instinct of propagation, of travelling, of making provision for future want, of singing, are in a state of inactivity at certain periods of the year; and it is precisely the reason, that all these qualities can individually be active or at rest, that proves that they are independent powers, and that they each have a particular organ.

How happens it, notwithstanding this, that some women do not have an equal love for all their children, that it sometimes is the case, that they hate some of them? How is this possible, if the love of offspring results from the activity of an organ?

However serious this difficulty may appear to certain superficial minds, it is in fact of very little importance. First, I have often remarked that female dogs and cats love one of their young in preference to the rest. But, if similar preferences exist in the females of animals, they ought, by a much stronger reason, to take place in women, whom so many secondary motives can influence, such as the hatred or love they have for the father, the beauty or homeliness of the infant, &c. So, the stomach does not digest equally well all kinds of food, and all meats are not equally

agreeable to even the most voracious gourmand ; all music does not please equally well every musical ear ; every woman does not inspire every man with desires and love.

“ These touching qualities of woman,” says Cabanis, “ necessarily depend on the kind of sensibility that we have said was peculiar to her. It is also to this cause, in a great measure, that we must refer the spontaneous development, or rather the burst of maternal love, the strongest of all the sentiments of nature, the most admirable of all the inspirations of instinct.”

And in another place he says : “ Of all the propensities that can be referred to the lessons of judgment and habit, is not maternal instinct the strongest and most predominant ? To what power must we attribute these movements of a nature, sublime in its end and means, movements which are not less irresistible, but which are perhaps more so in animals than man ? It evidently is not to the impression already received in the womb, or to the condition of the breasts, or to the sympathetic disposition in which the whole nervous system is found, in relation to these eminently sensible organs. Do we not constantly see maternal love as much more energetic and profound, as this sympathy is more internally active ; provided, at the same time, that the abuse of or misplaced abstinence from amorous pleasures has not rendered its character unnatural ? It is a fact, that, in general, cold women are rarely passionate mothers. The tenderness of fathers, in all species of animals, appears to be founded, at first, almost solely in the love they have for their companions. The influence of this sentiment, which is always imperious, often profound and delicate, causes them to partake with her a mother’s interests and cares.”*

After this, one would be authorized to regard the love of offspring as a result, or rather an extension of

* Relation of the Physical and Moral in Man, Vol. I, page 363.

the instinct of propagation. But I have already shown that the love of offspring is in full activity, without the least change having taken place, in the sexual parts. The instinct of propagation is extremely ardent in certain males, for instance, in the cock, dog, wild-boar, and stag, without these males taking the least interest in their young. In man, the instinct of propagation is generally more active than in woman; and notwithstanding this the females feel a stronger love for children. Many animals, for example, certain insects, amphibia, the cuckoo, among birds, take no care of their young, although they couple with great ardor. Others, such as bees and working ants, do not exercise at all the act of propagation, and notwithstanding this they take very assiduous care of the eggs and larvæ of the females. Who does not know women that are extremely voluptuous, who are very bad mothers?

The same woman of whom I have before spoken, who has never experienced any pleasure in the arms of her husband, and who is no more affected at the sight of a man than a woman, has given birth to twelve children, all of whom she tenderly loves. Do we not every day see women that despise the commerce of men, and bestow the most tender love on the children of strangers?

We are then compelled to admit, that the love of offspring is absolutely different from the instinct of propagation.

If a naturalist had only made a few of the observations that I have related, in speaking of the love of offspring, he could not have failed to suspect, that this instinct ought to depend on a particular organ. But it is very rare for a man to come to the discovery of any truth by reflection alone; it is requisite, in order to discover it, that reason should be guided by facts. For myself, I have not made all these observations, until after my researches on animals had convinced me of the existence of the organ of the love of

offspring, and that I had discovered its seat. I shall now complete the proof, that the instinct of the love of offspring is a fundamental quality.

The Love of Offspring and the Effects of its greater or less Development; continued.

In Man.

I have said, that, on comparing the different forms of crania, I had found that the superior part of the occipital bone recedes much more in the heads of women than men, and I have referred the reader to Plates LVI. XXX. XXXIX.

I have shown in the first section of this volume (on the influence of the brain on the form of the cranium), that those only of the prominences of the osseous box, which are formed by the encephalic mass, have a signification in craniology.

Let the reader then compare the brains of the two sexes that I have caused to be engraved in my large work, and he will be convinced, that the difference of the form of the cranium in man and woman really depends on the difference in the form of their brain. These brains have not been designedly chosen; all have been absolutely taken by chance.

The plates v. vi. viii. ix. xii. represent the brains of men; the plates; iv. x. xiii. those of women. We see distinctly that, in these last, the cerebral parts II. definite development, (*épanouissement*,) or that part of the organ of the love of offspring which is externally apparent, are much more developed, and encroach much more upon the cerebellum than in the first; now, it is from this greater development, that the prominence of the cranium results. This difference of form of cranium in the two sexes, is apparent from infancy. The cranium represented in plate xxxvi. is that of a boy twelve years of age; that represented plate xxxviii., a girl six years old.

Sometimes these two parts of the posterior lobes separate considerably from each other ; in such cases they produce a double prominence of the occipital bone, that is to say, there is then a double prominence on each side, and, between the two, there is a depression in the form of a groove. Most frequently these two lobes are contiguous, and the prominence of the cranium appears as a single protuberance.

I have already refuted, in the second volume, the opinion of those, who believe that these posterior lobes are the organs of the most eminent faculties in man, for the reason that these two lobes, according to some naturalists, are wanting in brutes. The fact is, that, in most animals, these lobes do not cover the cerebellum, which circumstance has induced superficial observers to maintain, that they are entirely wanting. But the reason, why these lobes cover the cerebellum or leave it exposed behind them, depends solely on the horizontal or vertical position of the animal, as I have already said. This place, that is assigned to the most eminent faculties, does not accord in any way with the gradual perfectibility of the brain and its functions. Let any one examine with attention the heads of individuals of both sexes of every age, and he will almost always find in them the same difference ; most frequently it will be found that the diameter from the frontal to the occipital bone, in girls and women, is greater than in men, because, in the former, the occiput recedes more. The cerebral part, placed in the occipital bone, is greater in women than in men, although the whole brain of the woman is smaller than the entire brain of man.*

There are, however, exceptions to this rule. Sometimes the cerebral part situated in the occiput, is feebly developed in a woman, and has acquired a very great development in a man. In these cases we may with

* This form of head, peculiar to woman, should not escape artists ; they ought to regard it in representing women.

much probability presume, that the woman resembles her father, and the man his mother, unless it is the case, that this particular conformation is hereditary in the family.

Men, with such a conformation, have a particular love for children; and when in them the organ of propagation is slightly developed, they console themselves with an apparently very philosophical resignation for the loss of a beloved wife, whilst the death of a child plunges them in profound and lasting grief. The sterility of their wife occasions despair in them, and often this circumstance is sufficient to induce them to treat with disregard a companion, who is very estimable in all other relations.

In those cases, on the contrary, where this organ is feebly developed in the woman, the consequence is, that she has hardly the character of her sex. Her principal destination is wanting. When, against her wish, she becomes a mother, her own children, if not odious, are at least indifferent to her. I knew, at Vienna, a lady who loved her husband tenderly, who managed the affairs of her household with intelligent activity, but who sent from home, immediately after their birth, all the nine children of which she was successively delivered, and for years she never desired to see them. She was herself astonished at this indifference, and could not account for it. In order to acquit her conscience, she required that her husband should daily see her children, and attend to their education.

The unfavorable development of the organ of love for offspring, is the principal cause of the slight affection, or even negligence, which certain women manifest in their conduct towards their own children, or those of strangers confided to their care. Hence these cruel mothers, like Isabella of Bavaria, of whom history relates, *that she had stifled all the sentiments that she owed her children*. Let us imagine a woman, in whom the organ of love of offspring is slightly

developed, without education, and having none of those motives which religion and morality afford, living a life of celibacy, a prey to an unfortunate love, having yielded to the desires of a lover who abandons her, and fearing contempt and misery. If a woman, thus situated, feels within her the fruit of her love, she will either destroy it before it comes into the world, or she will forsake it the moment it is born; if, unfortunately, the organ of murder is developed in her, can we be astonished if she destroys it with her own hand?

In twenty-nine women who had committed infanticide, that we have had occasion to examine, the organ of the love of offspring was very feebly developed in twenty-five. I refer the reader to what I have said on this afflicting subject in the fifth section of the first volume. There I observed that it is not solely the want of development in the organ in question, which determines mothers to infanticide, but that mothers thus defectively organized yield, sooner than others, to any unfortunate circumstances which incite them to crime, because they are not endowed with that profound sentiment which, in the heart of a good mother, would victoriously revolt at a similar attempt.

From the moment in which the young female, in whom this organ has acquired a very great development, knows her destination, all her ideas have the desire of being a mother for their basis. Every child that she meets gives a new impulse to the wishes that, perhaps without being aware of it, she forms in the bottom of her heart. However well and pleasantly she may be united in marriage, she cannot find happiness in her union if she is not a mother. An estimable husband is without doubt a precious treasure for such a woman, but nothing in her eyes approaches the happiness of having children. Let the nurse neglect, but for a few instants, to return with the beloved infant, and the alarmed imagination of the

tender mother depicts to her a thousand perils, which threaten it. In the moment of eminent danger, where is the hero whose courage equals that of a mother? How many women who lead a very wretched life with their husbands, still bless their marriage ties, for the sole reason that they have children!

We generally find the organ of the love of offspring more developed in certain nations than others. We observe that it is usually so in negroes; hence infanticide is a crime almost unheard of among these people. M. Peale, as well as other persons, from whom I have derived information on this subject, assure me that they have never heard of a similar crime committed by a black.

This organ is also generally very much developed in male negroes; thus we often see in Europe these people anxious to have the charge of children.

Travellers relate that the Tunguses and the inhabitants of North America, have an extraordinary love for children. I have seen at Göttingen, at the house of M. Blumenbach, two crania of Tunguses, and one cranium of an inhabitant of North America; in all three this organ was very much developed. Thus not only individuals, but entire nations, furnish proofs that the cerebral parts, placed in the occipital region, are the organ of the love of offspring. Let us now see what takes place when the organ is excessively excited.

Alienation of the Love of Offspring.

We have seen that the over-excitation of the organ of the instinct of propagation produces a partial mania, — erotic mania; in a similar manner arise all the monomanias, diseases, the explanation of which becomes impossible, if we do not admit particular organs.

In the great hospital of Vienna, there was a pregnant woman who was attacked with a serious disease. I was told that she had a very peculiar kind of delirium, that is to say, that she believed herself pregnant with six children. In consequence of my principles, I attributed this phenomenon partly to a more than ordinary development, and partly to an over-excitement of the organ of the love of offspring, and I entreated the physicians to send me the head of this woman in case she died. She died. What was my joy in seeing an extraordinary development of this organ! the posterior lobes not only encroached upon the cerebellum much more than they usually do in women, but they were farther rounded and very voluminous. **PLATE LX.** represents this cranium.

M. Rudolphi would explain the posterior elongation of this head, by pressure, which it may have suffered from above downwards. But how could he prove that a similar pressure had in fact taken place? Why have not the bones equally yielded in the direction of their breadth? For the rest, when a cranium is deformed by pressure, the cerebral parts may really be a little displaced, but can never acquire by this a greater than ordinary development. Similar objections would be admissible, at most, in the case where a physiologist should undertake to determine the seat of an organ, from a single fact and without having any other proof in support of his assertions. But when every thing in nature concurs to establish the same assertion, a single fact, which comes by chance to its support, becomes a new proof.

At Paris, I professionally attended a very modest lady, that was attacked with a mental disease. She lived in very genteel society, and went to Vienna in company with respectable people. She had hardly arrived there, when she visited all her acquaintance, and told them with the most lively joy, that she was pregnant. The circumstance of this disclosure, and

the known character of the lady were sufficient to induce some of her friends to believe that she had become insane. Soon this immoderate joy gave place to violent anguish and an invincible and melancholy taciturnity. A short time after this, she was attacked with consumption to which she soon became a victim. Here, again, the organ of the love of offspring was extremely developed, and, during life, this lady had singularly loved children.

We saw also in the hospital for the insane, at Amsterdam, a lady who incessantly talked of her pretended pregnancy. Her head was small. The organ of the love of offspring was the only one, that was very much developed.

We have even seen, in another insane hospital, a man who maintained that he was pregnant with two infants. We declared that he must have the organ in question very strongly developed, and the examination of his head proved that we were not deceived. Thus, then, the state of disease proves further that the instinct of the love of offspring ought to be considered as a fundamental quality, independent of all others, and founded in a particular organ.

The following case reported by M. Pinel, proves with what energy this instinct continues to act in mania.

“It is so common for affectionate mothers,” says this author, “to preserve still the profound sentiments of nature, in all the periods of their insanity, that we ought, with the greatest care, to spare them the sight of children that are strangers to them, and which some have occasionally the imprudence to bring with them in visiting some convalescent; this has sometimes excited the most stormy scenes. An insane woman while laboring under a violent paroxysm, saw a child which some stranger was leading by the hand; she believed it to be her own, and immediately sprung to seize it; she made the most violent efforts, and uttered frantic screams, while the real mother

was so affrighted, that she swooned, and continued in this state more than an hour. Another insane female who was convalescent, and who had the liberty of jumping, playing, prattling, and of practising a thousand innocent tricks, and of walking freely in the courts, escaping one day through the entrance gate, accidentally found a child at the porter's lodge, which she seized upon, and it was necessary to make use of strong efforts to get it from her. She immediately relapsed into furious mania, wounded many of the servant girls, and it was with great difficulty that they were enabled to confine her in her cell. The furious delirium, which was the consequence of this, was of many months' duration.*

"A mother, esteemed for her extreme attachment for her family, and whom domestic troubles had thrown into profound melancholy, regarded the food that was offered her as the portion that was destined for her children, and rejected it with indignation; it was necessary to submit her frequently to the shower-bath, to prevent her dying of consumption."†

Hildenbrand, in his work on contagious typhus, relates the case of a young Jewess of Galicia, who impatiently desired, while she was in the delirium of typhus fever, to have her son, who was distant ten miles, present with her. She caused him to be brought, received him with affection, and tenderly blessed him; after this, she took nothing but from his hands; and, when the delirium had subsided, she was astonished at his presence, asked him why he had come to her, and felt then, for the first time, with real knowledge, the true joy of a mother agreeably surprised.

* On Mental Alienation, 2d edit. p. 278.

† Idem, 296.

Of the Seat and the External Appearance of the Organ of the Love of Offspring in Animals.

I have examined, as much as it has been possible for me, the crania of birds, from the smallest to the largest, and of mammalia, from the mouse to the elephant, and I have found throughout that, in females, the cerebral part, which corresponds to the organ of the love of offspring in the human race, is more developed than in males. Let any one present me, in water,* the fresh brains of any two adult animals whatever, the one male and the other female, and I will distinguish the two sexes without ever being deceived. In the male the cerebellum is larger, and the posterior lobes, smaller; in the female, on the contrary, the cerebellum is smaller and the posterior lobes, or the convolution belonging to this function, are larger, and especially longer. When these two organs are distinctly developed on the cranium, I am able also to distinguish the two sexes by the simple inspection of the osseous box. In those species, where the difference of the love of offspring is very great between the sexes, the crania differ, sometimes, so much in their form, that we find them in certain collections arranged as different species, or at least as varieties of the same species, although they are taken from individuals of the same variety, but of a different sex.

As the whole of this subject requires exact, and even minute, observations, I ought to make here, for the use of those of my readers, who attach more importance to facts than subtile reasoning, some remarks on the differences which take place in different species, as regards the situation of the brain as well as the form of the cranium. But still I repeat, that we ought always to bear in mind, that only those prominences of

* It is necessary to put the brains in water, because, without this precaution, they would become deformed by their own weight.

the cranium occasioned by the cerebral parts, have any relation with organology.

In most birds, the cerebellum is situated behind the hemispheres of the brain, and is entirely separated from it. (Pl. I. fig. II. 5, 7, 8.) In females, the hemispheres of the brain are more developed, larger, longer, and higher than in the males; and it is on this account, that the cranium of females is wider, longer, and more prominent in the corresponding region.

But this difference is not very striking, except in those species, in which the male takes very little care of the young. Plate LVII. the regions marked II. are, without exception, more prominent in the cranium of the female than in that of the male. The cranium of the female manifests, in its superior part, by the side of the median line, two oblong elevations, which extend to that part which encloses the organ of hearing. Compare the cranium of the hen, fig. 2, and that of the hen turkey, fig. 4, with that of the cock, fig. 1. and that of the turkey cock, fig. 5. It is very easy, in these species, to distinguish the sexes, either by the eye or touch.

It requires a much more practised eye to distinguish the sexes by the form of the cranium, in those species in which the male and the female equally take care of their young. But even in these, the posterior part of the head is more convex in females than in males; because the former have always more attachment for their young, than the latter.

The difference is particularly well marked in those females who love their young extremely, either on account of the nature of the species, as the female of the silver pheasant, or by virtue of a particular organization. There is not a single farmer's wife that does not know, that individual differences exist in this particular, and who cannot very well distinguish in her poultry yard, those of the female hens, turkeys, ducks, and geese, that cover their eggs and manage their young with assiduous care, from those which destroy

their nests, or neglect and abandon their young. Let any one compare the heads of those possessing these opposite qualities, and he will be struck with the great differences.

The amateur, who wishes to form a collection with this point in view, ought not only to know the natural history of each species, but he should know besides, the peculiarities of each individual.

In general, the naturalist, who wishes to devote himself to organological researches, ought not only to be instructed in the habits of each species of animals, but he ought to know the particular conformation of their brain and of their cranium. It is impossible for me to give this subject all the developments of which it is susceptible; I should fill a volume on each organ and each fundamental quality or faculty, and yet the most detailed descriptions could never be so instructive, as a collection formed by an attentive observer. I will add a few words more on the mammalia.

We should also commence our observations on the mammalia, in the largest species, and especially in those, where the male takes no care of the young.

Let any one compare the cranium of the stallion with that of the mare; when the horses are young, the superior posterior part of the head of the mare is considerably more prominent and larger than that of the stallion. In the mare, the two parietal bones are more prolonged backwards, because the cerebral parts placed under these bones are more prominent, larger, and longer than in the male. As the horse becomes old, a transverse bony crest is formed on the occipital bone, which makes a projection between the ears. This crest is not in fact hollow, but as the subjacent cerebral part, which touches it within, is more developed in the mare than in the stallion, and elevates itself or recedes more, (as the head has a vertical or horizontal position,) this crest is more elevated in the mare, so that we can distinguish the two sexes by the simple inspection of the cranium.

The same thing happens in the bull and cow. See Pl. LIX. II. II. fig. 2, the male calf; fig. 1, the female calf. In the bull, the superior part of the head forms nearly an arc of a circle conjointly with the horns; in the cow, on the contrary, the summit of the head is elevated much more above the horns.

In the stag and hind, the roe-buck, fig. 1, and its female, fig. 2, Pl. LXV. II. II. the male and female goat, the male and female chamois, the ram and the sheep, the male and female wild goat, and in all the varieties of this family, the same difference exists in the conformation of the head, in the two sexes, as well in youth as in advanced age.

In all other animals, whether the male interests himself or not, in the care of the young, the region of the cranium, II. II. always recedes more in the female, and is less salient and more obtuse in the male; for instance, in the entire races of cats and dogs. Pl. LVIII. fig. 3, is the female cat; fig. 4, the male cat; fig. 7, the female dog; fig. 6, the male dog. In the badger, marten, beaver, marmot, and all gnawers; in rats, Pl. LVIII., fig. 1, female rat; fig. 2, male rat; the difference is often more strongly marked than between the bull and cow; the same thing takes place in the mole, shrew-mouse, and bat. The difference is still more striking in the ape, (*singe.*) Pl. LXV. fig. 4, is the cranium of the female ape; fig. 3, that of the male.

When one has a collection of brains, moulded in wax from nature, or even in plaster, he can not only determine, with the most scrupulous exactness the convolution, which constitutes the organ of maternity, but still further ascertain precisely the modifications of its external mark on the cranium. The different positions of the brain in the cranium produce modifications, which may sometimes cause the inexperienced observer to hesitate. The following examples will enable the reader to understand my idea; in the ape, a species of monkey, the posterior lobes of the hemispheres extend beyond the cerebellum, as in man

and woman ; so that this last is covered and compressed under the posterior lobes, the most posterior convolutions of which, being large and prominent, constitute the organ of maternity. Hence it happens, that the heads of female monkeys in this region are much more rounded and prominent backwards than the heads of male monkeys. (Pl. LXV. fig. 3, 4.) In the dog, the posterior lobes of the hemispheres only cover half of the cerebellum. The head of the female dog, on this account, is less prominent behind than that of the female monkey, but always more protuberant and larger towards the region of the cerebellum, than the head of the male dog of the same variety. In the cat, the posterior lobes of the hemispheres only cover a very small lateral part of the cerebellum. On this account the organ of maternity appears to have a seat much more in front, especially on the cranium. This organ is the second convolution commencing from the median line. It is also larger and more prominent in the female than the male cat, which I can demonstrate in more than a hundred specimens of heads of cats, that I have in my collection. The convolutions form an oblong elevation on each side, the whole length of the parietal bones to the cerebellum. These two elevations are very apparent and palpable, on the superior posterior surface of the cranium of the female cat. Although these crania are still much less prominent behind than those of female dogs, they are yet much larger and more prominent towards the cerebellum than those of male cats. Plate LXXVI. represents, for this purpose, the brain of a monkey, fig. 1 ; the brain of a male cat, fig. 2 ; the cranium of the female cat with the mark II. of the organ of maternity, fig. 3 ; and the cranium of a panther also, with the organ of maternity, marked No. II.

Whoever wishes to give himself the trouble of making a collection of animals, males as well as females, will find, in all species, a confirmation of the remarks I have just made on the difference of the organs

of propagation and the love of offspring in the two sexes. I could wish that all young naturalists might commence their researches by these two organs. Both are easily recognised, and it is very rare to find, as an exception to this rule, a male animal assume, as far as these two organs are concerned, the character of a female. It is well to select for one's collection, males and females of the same variety, and nearly of the same age; for, a great disproportion of age is a circumstance, which may occasion difficulties capable of embarrassing the beginner.

The more numerous the collection is, and the oftener the young naturalist shall have repeated each observation, with more assurance will he await all the objections; there are none that can disconcert him; every step, that he makes in advance, will encourage him to pursue his career, and in a few years he will be convinced, that organology rests upon an unshaken foundation.

The Influence of Castration on the Organ of the Love of Offspring.

Cabanis tells of the method, that every one knows, of making capons hatch and bring up chickens.* "They take a capon, pluck the feathers from his abdomen, rub it with nettles and vinegar, and in this condition of local irritation in which the operation has put him, he is placed upon the eggs. He continues there mechanically at first, to relieve the pain that he feels; he soon begins to feel a succession of unaccustomed impressions within his abdomen, which are rather agreeable to him, which induce him to continue on the eggs during the time necessary for incubation, and the effect of this is to excite in him a kind of factitious maternal love, which continues, like that of

* Relations of the physical with the moral in man.

the hen, as long as the pullets require assistance and protection. The cocks do not interest themselves in this case; they have an instinct that influences them differently.....”

As the same method does not succeed with cocks, it follows that the operation of plucking the feathers from the abdomen, and rubbing it with nettles and vinegar, is not the only cause which excites the love of offspring in the capon. I can well conceive, that similar procedures may suffice to awaken the activity of certain dormant organs; but what can produce these irritations where the organs do not exist? If, in the hen, as they would have us believe is the case in the mammalia, it is the ovaries, &c., which constitute the viscera, on which the instinct of taking care of the offspring depends, it would be impossible to excite this instinct in the capon by any procedure whatever. If, as no one will maintain, other viscera are the seat of this instinct, why are these viscera in the cock constantly incapable of exciting it? *The instinct which leads the cock in a different direction*, cannot prevent him from being susceptible of the love of offspring; since there are many males of other species of birds, which cover the eggs and take care of the young; and have not the females also this same *instinct, which leads them in a different direction?*

This observation should excite in naturalists a suspicion, that the love of offspring depends on a part which the capon equally possesses. It is a fact, that the organ of this love exists in male animals of species, where the male takes no care of the young; only it is slightly developed in them. We know, however, cases of dogs and stallions, who have sought with solicitude the young they have engendered, and who have protected them with tenderness and defended them with courage. But it appears to me, that in these animals the organ of the love of offspring acquires a greater development, in consequence of the

ablation of the genital parts, and the diminution of the cerebellum which is the consequence. Let any one compare the cock and the capon, the bull and the ox, the stallion and the gelding, &c. Since I have mentioned this in my large work, I have made a numerous collection of castrated animals of many species. In all those that were castrated in the early period of their life, the organ of maternal love is almost always found evidently more developed than in the perfect animals of the same kind. It can then be easily conceived how this organ is susceptible of a greater excitation in the capon by the irritation of the abdomen, as it is in the hen by the simple influence of the season and more nourishing food.

General Remarks on the Instinct of Propagation and the Love of Offspring.

It is disputed whether we should give to the instinct of propagation the name, physical love, amateness, generative energy, instinct of reproduction, of propagation, or venereal instinct. To propagate, say they, is neither to engender nor reproduce, it is only a remote consequence of it. I answer, that to engender and reproduce are only a consequence of an act. If an appellation drawn directly from it, had nothing revolting to delicate ears, it would better express what is understood by the propensity for propagation. Physical love and amateness do not take place, either in animals or in the insane, nor often in the most ardent men. Generative energy does not suit better, since the venereal instinct exists, and often acts without any generative energy. Hence it is much better to preserve an appellation, which is understood by all, and is equally applicable to animals and man. For this reason I have not thought proper to change my first name, — propensity or instinct of propagation.

It has also been wished to change the term love of

offspring, for philoprogenitiveness or philogenesis. As for myself, I prefer, wherever it is possible, words derived from our living languages. The mania for seeking Greek and Arabic words, gives an air of erudition, but renders the reading more difficult and often unintelligible.

The question would be more important, to know if the nomenclature adopted for these two instincts agrees only with one of their modifications, or with these two primitive radical powers. Although I have fixed upon the venereal instinct as a fundamental quality, after having observed it in its extraordinary exercise, I have not denominated it in conformity with its excesses. It was not difficult to abstract it from all its modifications, and reduce this function to its peculiar and essential term. As to the love of offspring, it would hardly be possible to find a more appropriate appellation.

No one will deny, that the instinct of propagation, and that of maternal love, are the two most imperious, essential, and important propensities or instincts. But, from all the facts cited in the exposition of these two instincts, one must needs be beset with an imperturbable attachment for ancient prejudices, should he still wish to seek for the seat of the venereal instinct in the genital parts, or that of the love of offspring in the womb or the breast distended with milk. Then it is proved, not by reasoning, but by irrevocable facts, that the *propensities* also have their legislative organs in the brain. Error was inevitable, so long as we were entirely ignorant of the organization and destination of the brain, and so long as the human race was degraded, by comparing many of its qualities, not only with those of other mammalia, but even with those of birds and insects.

The essential difference, and the gradation of activity of these two instincts, enable us to understand that the expressions, *instinct*, *propensity*, *passion*, are abstractions, and cannot belong to a single general or-

gan. The instinct of propagation is essentially different from that of the love of offspring ; this last is more active in the female sex ; the other is most so in the male sex ; one exists in animals in which the other does not ; one may be excessively energetic in one individual, whilst the other is hardly perceived, &c. &c. Both of them have regular gradations, both as it respects different individuals, different ages, different circumstances, from the simple disposition, the nascent propensity, to the most imperious passion. Thus there is disposition, propensity, and passion, in the love of offspring ; and there is disposition, propensity, and passion, in the instinct for propagation. Consequently, the disposition, propensity, and passion of the venereal instinct have their seat in the organ of this fundamental quality ; and the disposition, propensity, and passion of the love of offspring have their seat in the organ of its appropriate fundamental quality also. So all the affections of these two instincts are nothing more than modifications, affections of their respective organs.

It is thus that I hope to prepare my readers for that philosophy, which alone is in conformity with the nature of man and animals.

Let any one call to mind the history of the discovery of these two fundamental qualities and the seat of their organs, and he will be convinced, that I have neither discovered them by reflection, nor by any induction whatever. I had not the least presentiment, that I should discover the seat of these two instincts in the brain ; and yet is there any thing more natural, than to find that instinct of propagation connected with the most essential cerebral part, and placed immediately after the *medulla spinalis*, at the commencement of that series of organs, of the moral qualities and intellectual faculties ? What can be more consistent than to see ranged, immediately after the organ of propagation, the organ of that instinct, which is devoted to the preservation of that which it engenders ? Unfortunately, arguments of this kind are not felt by the amateurs of mutilation and speculation.

I now return, and I shall frequently do so hereafter, to the opinion of Cuvier, announced in his "*Regne Animal*," vol. I. p. 54: *that instinct has no visible mark in the structure of the animal*. This is great authority, one certainly well merited; but, in the eyes of naturalists, there is no other irrefragable authority but that of nature. The experience of all ages has proved, that the greatest men have paid tribute to their age by consecrating errors, the ridiculousness and absurdity of which have been generally admitted a few years afterwards. Where would many objects of natural science be, if we had always respected the authorities of Hippocrates, Galen, Celsus, Boerhave, Sydenham, Haller, Lavoisier, &c? And to confine myself within the sphere of my own researches, how often have I not been obliged to combat the declarations, often very insignificant, of Hufeland, Walter, Ackermann, Richerand, Rudolphi, &c. &c. Have not men of the greatest reputation, in their report to the Institute of France, contested the most essential points of our anatomical discoveries, adopted at the present day by those authors themselves, and by all those who have given themselves the trouble to examine them? Should I recoil before the great merit of the Pinels, Esquirols, Fodérés, &c., to prove that the immediate seat of mental alienations is in the brain? Great authorities ought not to have any other influence, than that of engaging us to rectify their errors by a more imposing mass of facts. Very well; the demonstration of the organs of the instinct of propagation, and that of the love of offspring, is the easiest and most evident. Every family, every society, all domestic and wild animals, furnish us with undeniable proofs. I challenge individuals, learned societies, and academies, to make a collection of the brains and heads of men and animals of the two sexes, of perfect and of castrated animals, to observe the energy of their propensities, to repeat my experiments, &c.; and if, after doing this, their conscience will still permit them to declare my

discoveries false, or only doubtful, I will be the first to renounce the whole physiology of the brain.

How will the advocates of the opinion of Cuvier, reply to the following dilemma? Either the brains of all species of animals have the same structure, and impress the same conformation on heads and crania; or the brains of different species of animals are differently organized, and impress a different conformation on their crania. Unquestionably, if the first proposition were true, the different instincts of animals would have no visible mark on their heads. But what naturalist can deny the immense variations of structure of the brain of different species of animals, and the conformation of their crania? That being established, it must either be maintained, that these different organizations of the brains of different species of animals are without an object, without any accordance with the difference of their instincts, and, in a word, that the brain in animals has no function; or, it must be admitted, that these different organizations have different instincts for their result; and, as these different forms of the brain impress different forms on the crania, it necessarily follows, that these different forms, whether of the brain or cranium have different significations. All that is to be done at present is to learn these significations. If they have escaped you, admit it, and confess to the public that you are ignorant of them; but do not commit yourself by maintaining, that a thing does not exist, merely because you are ignorant of it; and that another, who has applied himself for many years to a study, is as ignorant of it, as yourself.

III. *Attachment. Friendship.*

History of its Discovery.

I was requested to take, for my collection, a cast of the head of a lady who was, as they told me, the model of friendship. I took her cast, more out of

kindness than in the expectation of making any discovery, and I endeavoured to get a correct one. On examining this head, I found two great prominences, constituting the segment of a sphere, by the side of the organ of the love of offspring. As, up to that time I had never seen these prominences, which, however were evidently formed by the brain, and exceedingly symmetrical, I considered them as a cerebral organ: but what were the functions of this organ?

In order to get some general view on this point, I inquired of all the friends of the lady, respecting her qualities and faculties. I attempted to learn of the lady herself, what propensities and faculties she believed she possessed. All united in confirming what had been told me, that she had an invincible attachment to her friends. Although her fortune, at different periods, had experienced great changes, and by degrees she had passed from poverty to honors, her feelings for her old friends had never changed. This characteristic trait struck me. The idea occurred to me, that the disposition to friendship might also be founded in a particular cerebral organ. This opinion acquired with me a still greater degree of probability, as the prominences, that I had observed on the head of the lady, were placed immediately above the organ of physical love, and by the side of that of the love of offspring, and these three sentiments have some analogy with each other. Whatever may be the difficulty of making exact observations in man, on the organ in question, and on its functions, the idea, that attachment and friendship depend upon a particular cerebral organ, acquires a degree of probability almost equal to certainty.

Natural History of Attachment and Friendship in Man and Animals.

I shall with reason be accused of calumniating human nature, if I call in question the received opin-

ion, that friendship is a quality essential to man. There is no one who, strong in the testimony of his own heart, does not reject with scorn the abject idea, that it is solely from the want of mutual aid that men are attached to each other ; that the state of society is the result of interest and the instinct of propagation. Does not history present us with the most noble examples of the devotion of friends, who gave themselves up as hostages for their friends ? The inviolable fidelity of friendship in criminals, sometimes commands our admiration, even when they are most depraved. They have been seen to support tortures and brave death, rather than betray the faith that they have sworn to their accomplices.

He, who feels friendship, lives for others. He alone feels happy in a circle of friends ; his friend is his greatest good ; he is ready, at every moment, to do every thing, to sacrifice every thing for him ; but he expects the same sacrifices. The happiness of his friend is his own happiness ; and his sorrows become those of his friend ; his heart is inaccessible to envy and malignity.

Where can any one pass more happy days than in the bosom of a people, in whom friendship is a daily virtue ? At a banquet, in the social circle, every where we find friends, every where the heart is expanded, and these feelings are reciprocated. The master, the subordinates, the domestics, form but one family ; the happiness of the one is the most important business of the other ; to be the occasion of happiness to one's equals, is a delight as fervent, as that of receiving a kindness from the hands of friendship.

But further, every one knows the great difference in this respect, that exists between individuals and even those of the same countries. There are men who have never felt the sentiment of friendship, and who find a thousand pretexts for excusing their cold indifference. I know a man, who has often assured me, that he was an enigma to himself. He is of a

very mild character, filled with benevolence for all his acquaintances, and loving his children to excess. To take care of a sick person, he spends day and night. Nothing deters him ; but he has never been able to have an idea of what is called friendship, or attachment. Although constantly residing in the bosom of a numerous family, a separation, either by a journey or death, never occasions him the least painful sensation. I know others, whom the unexpected news, either of a misfortune, or the disease of some of their most intimate connexions, has never affected. Who does not know, that there are egotists, for whom self is the whole universe, who will not marry from the fear of imposing upon themselves some slavish obligation, prejudicial to their exclusive interest ? Who does not know the difference, that exists between a city, where friendly relations make the delight of society, and a city, where selfishness takes the place of the reciprocal relations of friendship ; where the hurry of business, the anxiety for making a fortune, dissipations of every kind, stifle the least symptoms of friendship ; where the forms of politeness, and exaggerated and senseless language, are substituted for true sentiments ; where vain protestations take the place of kindness ; where each individual is but an instrument of pleasure for his neighbour ; a mere counter, necessary for the calculation of interest ; where all the good services that are rendered you, are the services of speculation ; and where for sake of the most frivolous benefit, a connexion of many years' duration is broken with indifference ; where the father, mother, husband, wife, brother, sister, &c., that death has just removed, are forgotten from the instant they are buried ; where, to recall their memory, is to shock the rules of society and commit an imprudent act ; because this recollection would awaken perhaps some disagreeable sensation !

Most animals are susceptible of attachment, if not for man, at least for other animals. We have often observed, that horses and oxen grow lean, when they are deprived of their accustomed companion. In

herds we often see certain animals keep constantly together. In Denmark, among a stud of horses, we observed that those of the same colored hair invariably associated together. The attachment of apes, as well for animals of their own species as for man, exceeds all idea. Every one knows the small species of parrots, called *inseparable*, because they often die, when separated. All of us have admired the friendship which sometimes exists between the tiger and the dog, a lion and a dog, a horse and a dog, or between two dogs. A seal, that I had for a few days, had become so much attached to me, that, when I went out, he made strong efforts to leap from the trough and follow me. The dog defends his master to his last breath, who often has the ingratitude to maltreat him. He dies with grief and hunger on the tomb of his beloved master, and attacks his master's assassins with great fury, even after a lapse of years.* There are examples, and these cases are not very rare, of dogs dying of the joy, occasioned by the return of their master, and others, who, having unexpectedly found their master dead, have instantaneously expired from emotion and grief. In a dog, that had died in this way, we found the heart ruptured. We have seen tame wolves, that felt so much sorrow at the absence of their master, that they obstinately refused all food, and died of hunger.

Great varieties exist in this propensity, in animals as well as in man. There are dogs who can never forget their first master; in vain are they sent to another city at a very considerable distance; they return, and their attachment is stronger than ever. Others, on the contrary, run from house to house, from one person of their acquaintance to another, without ever being faithful to any. It is the same with all animals. I have always had a great number of birds, squirrels,

* The dog of a soldier, who had been killed in a duel, passed days and nights on the tomb of his master; all attempts to remove him were ineffectual; and they were obliged to make a niche in the tomb for this faithful animal.

&c. ; some manifested the greatest indifference for me, and others exhibited the strongest attachment.

All these observations concur to prove, that friendship is not at all, as some people pretend, a sentiment founded on the calculations of interest, or, on a sympathy taking its source in a relation between the manner of thinking and feeling ; facts oblige us to admit, that this sentiment belongs to a fundamental quality.

On Marriage, in Man and Animals.

It is extremely difficult to discover completely the sphere of activity of an organ or a fundamental quality or faculty. I have, for a long time, compared the crania of all the animals that I had, and of all the individuals that I had ever an opportunity of observing, in order to discover the organ which leads men and animals to contract marriages for life. Marriage has been instituted by the Author of all that exists ; but it is hardly possible, but that this should be by means of a particular organization. Still I am constantly in doubt, whether my ideas in this particular are in conformity with nature. Here I am obliged to satisfy myself with probabilities, and whenever I cannot establish myself on facts at every step, I advance with the greater caution.

Most of my readers have no idea that marriage exists in animals, and in our own species it is only regarded as the result of social institutions. Man is not always willing to persuade himself, that, in whatever manner he acts, it is the finger of God, that impresses upon him the first movement.

Certain animals, such as the bull, stallion, dog, never approach the female of their species, except when they feel the want of copulation, and do not exclusively satisfy their desires with one only ; and these desires being satisfied, there is no longer any attachment between the male and female ; each one takes care of himself.

Other animals, on the contrary, when they feel amorous desires arising within them, select among many females, one towards which they appear attracted by a kind of sympathy; and until they have acquired peaceable possession of her, they combat with ardor other males, that pretend to dispute with them the conquest of the object of their choice. From this moment the union is concluded for life. Conjointly with their companion, they take care of the young born from this union, until they are in a condition to provide their subsistence for themselves. Though the time of propagation is passed, the couple continue in the most affectionate union; they make journeys together; when they are animals that live in herds, they always keep close to each other. In the spring they renew their loves, and continue in this state as long as they both live. It is not until one of the couple perishes, that the other makes a new choice. It is in a similar union, that the fox, marten, wild-cat, mole, eagle, hawk, pigeon, stork, swan,* nightingale, sparrow, &c. live. Marriage for life is then ordained by nature for all these animals; it would be the same with man, if our race, on account of such a multiplicity of propensities, were not subject to so many modifications.

After this exposition the reader will not be astonished, if I apply myself to discover the organic cause of the difference, which exists in this respect in the kind of life, as well in animals as in man. Does marriage result from the action of a single organ? Does it result from the simultaneous action of many organs? What is the organ, or what are the organs the action of which determines it?

Spurzheim believes, that he is able to decide these questions; he thinks, that it is the attachment and friendship of the male and female for each other, which influences them not to forsake each other, after

* They even say, that, in the wild swan, the reciprocal attachment of the pair is such, that, when one dies, the survivor lives in voluntary celibacy for the rest of life.

the instinct of propagation is satisfied, but to remain united, even when the season of their loves is passed.*

I should be also tempted to profess the same opinion, but I confess the facts appear to me to be of a nature to excite some distrust. The dog, the model of attachment among animals, and very ardent in his loves, never lives in a state of marriage. It is true, that sometimes a female dog bestows her favors exclusively on one dog, but these cases are very rare; and, as to male dogs, I doubt if any one has ever occasion to praise their fidelity in love. I have before said, that oxen and horses are susceptible of much attachment, as well for other animals as for man, and still it does not appear that among these animals, even in a state of nature, one male and one female particularly attach themselves to each other.

Spurzheim replies to this, that the modifications in the habits arise from a simple modification of the organ of attachment; the sense of odor and taste are also, says he, differently modified in frugivorous and in carnivorous animals.

It is certain, that modifications of the organ of attachment exist in the different species of animals. Certain animals have a preference, an attachment for individuals of their species; others conceive an affection rather for animals of another species, or, for man; the dog, for instance, attaches himself to his master, and to those persons that he is in the habit of seeing; but I shall not dare to affirm, that marriage can be explained solely by modifications of this nature. It is a fact, that the organ of attachment is placed near those of the instinct of propagation and of the love of offspring; and, if an organ of marriage exists, it should be placed near these three. The instinct of propagation and the love of offspring are common to us with animals; the organ of these propensities ought then to be among the number of cerebral parts, with which animals are endowed, as well as man.

It is further certain, that, where marriage exists,

* The physiognomical system of Drs. Gall and Spurzheim.

there is also attachment and friendship ; but it is not true to say, that marriage takes place in all animals susceptible of attachment and friendship. Facts prove even the contrary.

If I could have full confidence in my acquirements in natural history, I would on my part propose an opinion.

It seems to me, that, in all the species where the male and female both concur in taking care of their young, there exists marriage for life ; that in those species, on the contrary, where the male contents himself with procreating the young, without attending to their bringing up in the least, the female that first comes, serves him for the satisfying of his desires, and that the essential end of nature is fulfilled without the marriage tie.

The males of certain species, that live in a state of marriage, are not capable of nourishing their young ; the roe-buck and the warren rabbit are examples of this ; but they defend the female and the young from their enemies, and play with and caress the young, like the mother.

Partridges live together in a family until the moment when the young are capable of propagating ; the male is the conductor of it ; when he is killed, the family, deprived of its head, becomes entirely the prey of the hunter. When the male partridge escapes the danger, the sportsman does not succeed in destroying his family ; for, he instantly leads it beyond the frontier. The male takes care of the young with the female ; and, like her, he protects them from the rain with his wings.

While I am passing in review the habits of animals in relation to this point, the cuckoo excites in me some doubts.

Most naturalists appear to admit, that the cuckoo lives in the state of marriage. I have not been able to assure myself of this. As he neither hatches nor nourishes his young, and as he abandons his posterity

entirely to the care of other birds, it would seem, that nature had acted without an object, in instituting marriage with him. Some one pretends to have seen in England the female cuckoo hatch her own eggs and feed her young; but no one has ever seen the male join himself with the female, to divide with her the care of the young. I have very often observed this bird in the time of his loves; he is extremely ardent; we most frequently see many who reciprocally pursue each other; still I have never been able to assure myself, whether the male satisfied his desires with a single female or with many.

There are both men and women who, without any external accidental cause, have an aversion to marriage. If we could read the bottom of their hearts, we should perhaps find there the solution of the enigma. Are such people incapable of attachment and friendship? Do they fear the expenses of a family? Are they egotists to whom we can apply the proverb, *Impius, ut cuculus pater, generat atque relinquit*? *

We shall be able to speak more boldly on this point, as well as upon many others, when we obtain more extensive knowledge of the manners and habits of animals. There are many, of which we are still ignorant even up to this very hour, whether they live in a state of marriage or not; there are others which, we observe, lead a life of celibacy, solely, perhaps, because they are not left to nature; and because more males of their species than females are killed. There are animals, such as the dog and cat, who perhaps would live in a durable union with one female, if their young did not find abundant food in our houses. The wild-cat, for aught I know to the contrary, lives with a single female; certainly the wolf, in certain cases, lives in a state of marriage. I possess the cra-

* There are people who refuse to marry, because they have not been able to obtain the hand of the object of their love. This case is not perhaps very frequent, but it exists. These people appear incapable of an attachment, merely because they are already irrevocably attached for life.

nia of a male and female wolf, that were seen together for many successive years. What I have just said on the state of marriage, will be sufficient to enable the reader to comprehend, why I speak on this subject with so much reserve.

Alienation arising from Attachment.

An excessive development of the organ of attachment may predispose to mania. A peasant woman became insane three times; the first, at the death of her brother; the second, at the death of her father, and the third, at that of her mother. After she had recovered the third time, she came to consult me. As she was very religious, she complained to me of her unfortunate disposition to be afflicted, at the loss of persons who were dear to her, more than religion permits; an evident proof that she had yielded to grief, although she had combated it by motives which were within her reach. Pinel relates some similar cases: "A young man," says he, "after other unfortunate events, lost his father, and some months after a mother that he tenderly loved; hence arose deep and all absorbing melancholy, with loss of sleep, and appetite; and by degrees ensued a most violent mania."*

Two young conscripts joined the army; and in a bloody engagement one of them was killed by a ball at the side of his brother; the other remained motionless and like a statue at this sight. Some days after, he was brought in this condition to his paternal house; his arrival caused the same impression on a third son of the same family; the news of the death of one of his brothers, and the insanity of the other, threw him into such a consternation and stupor, that nothing could better realize a state of icy immobility from fright, that so many ancient and modern poets have painted.

* Pinel on Mental Alienation.

Of Sociability in Animals and Man.

Sociability is another propensity, of which, in spite of all my researches, it has been impossible for me, up to the present time, to discover the material condition. As this propensity is common to man and animals, it requires, that its organ should be among the number of those cerebral parts with which animals are endowed, as well as man ; it should also be placed in the neighbourhood of those of which we have already treated ; or rather sociability is included in their sphere of action.

I have in another place, vol. I. sec. 2, shown that the causes which are assigned for sociability, are not admissible. Society is neither founded on our wants, nor in general upon calculations of interest. Strong and powerful animals live in herds, as well as weak animals. The black bear of America (frugivorous) lives in herds at Kamschatka, whilst the great brown bear lives always by himself. Some species live in herds the whole year ; others only collect together at certain seasons. There are some that only live in society with their own family during summer and winter, and who separate in the spring, the season of their loves. There are many that live in herds formed of couples ; in other species still, one male lives surrounded by many females. All these societies, differently modified, are so many institutions of nature.

In all probability, sociability enters into the sphere of action of the organ of attachment, and the different modifications of society belong to as many modifications of this organ. But, it has always appeared to me very difficult, to deduce marriage and sociability from the same source. If, for instance, the love of offspring were the cause of sociability, why do not the stork, roe-buck, and fox live in society like the sheep and man ? Many animals live in society without uniting in couples for life ; such are the bull, the dog, the stag, and the cock ; others live at the same

time in couples and in flocks, as the crow and sparrow; others are united in pairs for life without living in society, as the magpie, fox, marten, and nightingale. The heath-cock and the sea-merle live isolated without a female. The red male partridge separates from the female immediately after coupling, although this variety is gregarious. The tufted lark lives a solitary life, the common lark lives in flocks, at least during autumn and winter. The wren, (troglodyte of Europe,) the marsh, tomtit, *penduline*, *remis*, live solitary lives. The great tomtit, the blue, the long tailed, and the bearded tomtit, prattler, wren, (*motacilla regulus*;) live in flocks. The badger lives alone even in her family. Can any one still have recourse to a simple modification of the organ of attachment? It is, no doubt, humiliating to be compelled so frequently to confess our ignorance; but it is the part of prudence, to wait until time shall enlighten us.

I have compared the crania of most of the animals above mentioned, as well as those of many others, whose habits are very different as to sociability or solitary life. I have compared, for instance, the great black raven (*solitaire*) with the crows and the little raven; the tame jackdaw, living in flocks, with the magpie, who lives in society with his family only. I cannot affirm, that this examination has enabled me to distinguish by the inspection of the cranium, the animals that live in society, from those that lead a solitary life: notwithstanding this, it appears very probable that the propensity to live in society, is comprehended in the activity of the organ of attachment.

Certain people feel a particular inclination to live in society. Every thing which surrounds them, acquires by degrees a greater value in their eyes. They become attached to the place of their residence; to their clothes. They are troubled when they are obliged to leave those, whom they have been in the habit of seeing. Who is not acquainted with the disease of home-sickness, so painful, and at the same time so fatal? Can any one conceive, without the

propensity of attachment, that men, transplanted from the most severe climates, under a fine sky and in the midst of every enjoyment, feel themselves pining away, with the desire of seeing again their mountains of ice, and of again living on fish oil? Others seclude themselves even in the midst of a crowd and withdraw from the most various objects; nothing attaches them; they change with indifference their society, dwelling, and residence. From this it follows, that the organ of attachment can only have its minimum of development, in these misanthropes, who, like Timon and Apomantes, have a hatred for all commerce with men.

Of the Seat and External Appearance of the Organ of Attachment.

The convolutions of the brain marked III. (Pl. VIII. IX. X.) constitute this organ. They are generally placed between the organ of the love of offspring, and that of the preservation of self and property; or rather, to the right and left, and outside of the organ of the love of offspring. When the organ of the instinct of propagation, is strongly developed in its superior part, the organ of attachment is placed a little higher than that of the love of offspring.

In the cranium, it is situated in the middle of the edge of the parietal bone, and when it is advantageously developed, forms two distinct annular prominences, or, at least, the cranium is large and prominent in this region. When, on the contrary, the organ of attachment is very slightly developed, the cranium in the same region is narrow and depressed.

See Pl. LXII. the cranium of a man, remarkable for the affection he had for his friends, and who, even in dying, left them proofs of his attachment.

Women are generally more devoted to their friends than men, and manifest an indefatigable activity to render them services. Whoever has gained the

friendship of a woman is sure of the success of the affair, in which she serves him; men are much more easily discouraged in similar circumstances. I have had occasion, a hundred times in my life, to admire in women, the most generous activity in favor of their friends. Who is not astonished at the courage, which a woman displays, when she sees threatened with imminent dangers a husband, whom indiscretion has perhaps a thousand times betrayed? Who does not know instances of the most heroic devotion in such cases? No sacrifice is too great for a woman in serving her friend. When the life of her brother, husband, or father is at stake, she penetrates prisons, she throws herself at the feet of her sovereign. Such are the women of our days, and such history depicts those of antiquity. Happy, I repeat it, is he who has a woman for a friend!

The organization of the head of woman corresponds perfectly with these sublime qualities. Most of the crania of women, in the region indicated, are larger than the crania of men.

In animals susceptible of a great attachment, also, this region is larger and more prominent than in others. The cranium of the dog is particularly remarkable in this respect. We may be convinced of this by examining a collection of the crania of dogs, some of which were very much attached to their master, and others vagabonds by inclination. This organ is singularly developed in the seal, who is not only very susceptible of attachment, but lives in society. The cranium of the sheep, so social, is remarkably distinguished in this respect from that of the roe-buck, who lives, it is true, with his family, but never is gregarious.

The cranium of the sparrow, pigeon, starling, crow, jack-daw, (*corvus monedula*, Linn.) is also larger in the region above indicated, than that of the yellow-hammer, blackbird, magpie, falcon, eagle. The parrot has this region very large and prominent.

Although it may be extremely difficult, on this subject, to collect, in man, a sufficient number of observations which leave nothing more to be wished, it is not the less true, that the natural history of man and animals, concurs with the form of the head, as well in man as in brutes, to prove that attachment or friendship ought to be considered as a fundamental quality, and that the organ of this quality has its seat in the region of the brain and cranium, which has been indicated.

M. Démangeon, who has made a very exact analysis of my large work,* adds his own critical reflections on different subjects. I shall neglect none of his remarks in the sequel of this edition. This is what he says respecting the organ of attachment : " We see, that the reciprocal attachment of animals among themselves, is based on the generative instinct, and in the resemblance and accordance of their other tastes and interests ; that is to say, in an analogy of sentiments, that may be called sympathy. The organ of attachment or friendship of our author is, perhaps, only sympathy strengthened by interest, hope, gratitude, &c. On this supposition, would there be a special organ of sympathy, or would this organ be the result of many similar faculties, or, at least, faculties fit to enable us to appreciate in others, those qualities which flatter our tastes, our propensities, and our habits? What would render this probable, is, that, in order to be on good terms with others, we must not oppose their fancies nor their self-love ; from this we may see the reason why flattery has so much success, especially when it is founded on an identity of tastes and opinions, or, when it adroitly simulates this identity. It is also certain, that the dog, who has a great number of the tastes of man, attaches himself to him more strongly as he is better understood ; it is a matter of observation, that good nature and good will in men do

* Analytical and critical table of the work of Dr. Gall on the nerves, brain, and their automatic and intellectual functions : by J. B. Démangeon.

not belong to inferior minds. From these considerations it would not be unreasonable to derive sympathy, love for offspring, friendship, and benevolence from one and the same source. This would sufficiently well explain why the same religion, same language, government, manners, country, profession, the same opinions, and the same danger, give to benevolence, to sympathy, and to patriotism, an energy which favors, privileges, differences of conditions, and every thing which tends to prevent the equal relations of men with each other, either diminish or destroy. Never will a crew, composed of masters and slaves, afford an example of exalted and universal patriotism, such as was exhibited on board the ship *Vengeur*. Sociability, which is strengthened by sympathy, as well as the necessity of self-preservation, seems to have a mixed origin, and to be extended or restrained, according as the principle of individual preservation, of which property is one means, coincides more or less with sympathy, whence flow vanity and all the frivolities that are called social enjoyments. We see then why the man, whose wants are limited and little varied, like him to whom society is disgusting, voluntarily confines himself to his own family, or admits only one companion to his society."

The tendency to abstract and generalize, is so natural to man, that I can very well conceive the difficulty that I every where meet with, in urging the acknowledgment of the most obvious distinctions. Such objections will always weigh with those, who, fixing their attention on man alone, neglect the economy of animals. The reciprocal attachment of animals is certainly not based on the generative instinct; for, it by no means follows, that all the animals, that have the generative instinct, have also that of attachment, either for the females of their own species, or for their own offspring. Without repeating the examples, that I have already cited in the preceding treatises, are there not even men, who, devoting themselves pas-

sionately to the generative instinct, are not susceptible of any attachment either for a woman or for children? And what relation has the generative instinct between a dog and his master, between two oxen, two mares, between a lion and a dog; finally, between two men and two women, between brothers and sisters, &c.? I admit that interest, gratitude, the analogy of tastes and sensations, and sympathy, strengthen attachment. But, if this sentiment did not previously exist, how could these circumstances create it? The generative instinct is certainly excited and strengthened by the charms of the other sex; but, all the charms imaginable could not create it, where it did not exist. Let us not raise the singular pretension of M. Démangeon, that the dog is attached to his master in proportion as he is understood, and that good nature and benevolence are not the inheritance of limited minds. Why confound good will and benevolence with attachment? If we wish well to those, to whom we are attached, we are neither attached to all men nor all animals, for whom we have a benevolent regard. And how then will the ideas of sympathy, equality of tastes and sentiments, of interest and gratitude, find their application to the attachment for our native soil? It would then be unreasonable, to ascribe to the same source the generative instinct, sympathy, attachment, love of offspring, and benevolence or good-will.

If M. Démangeon had had before his eyes the social life of sheep, horses, cows, fishes, insects, sparrows, chamois goats, starlings, &c., he would have reasoned quite differently on the instinct of sociability. And therefore, if man alone often appears problematical, seek the solution of your difficulties in other parts of the animal kingdom.

ON
THE FUNCTIONS OF THE BRAIN
AND
OF EACH OF ITS PARTS:

WITH
OBSERVATIONS ON THE POSSIBILITY OF DETERMINING THE IN-
STINCTS, PROPENSITIES, AND TALENTS, OR THE MORAL
AND INTELLECTUAL DISPOSITIONS OF MEN AND
ANIMALS, BY THE CONFIGURATION
OF THE BRAIN AND HEAD.

ORGANOLOGY;

OR,

AN EXPOSITION

OF THE

INSTINCTS, PROPENSITIES, SENTIMENTS, AND TALENTS,

OR OF THE

MORAL QUALITIES, AND THE FUNDAMENTAL INTELLECTUAL
FACULTIES

IN MAN AND ANIMALS,

AND THE SEAT OF THEIR ORGANS.

By FRANÇOIS JOSEPH GALL, M. D.

TRANSLATED FROM THE FRENCH

By WINSLOW LEWIS, JR., M. D., M. M. S. S.

IN SIX VOLUMES.

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CONTENTS.

	Page.
Exposition of the fundamental faculties and qualities, and the seat of their organs, or organology. Continuation . . .	13
IV. Instinct of self-defence, disposition to quarrel, courage (<i>Muth Raufsinn</i>)	13
History of the discovery	14
Natural history of courage, or the instinct of self-defence . .	16
Derangement of the disposition to quarrel	21
Fundamental quality of the disposition to quarrel and fight .	24
Of the seat of the organ of self-defence	26
Opinions of some other physiologists on the origin of courage .	28
Cowardice	33
V. Carnivorous instinct; disposition to murder (<i>Wurgsinn</i>) . .	50
History of the discovery of this instinct, and of its organ . .	50
Natural history of this instinct in animals	51
External appearance of the organ of the carnivorous instinct, and the seat of this organ in animals	54
Natural history of the carnivorous instinct in man	60
Disposition to murder joined with mental imbecility	68
Disposition to murder in insanity	69
Criminal case of H * *, who assassinated two persons	76
Continuation of the instinct of murder in a state of mental alienation	94
Disposition to suicide, and consecutively to murder, proceeding from an erroneous judgment of the nature of the crime . .	96
Disposition to suicide, and consecutively to murder, from religious fanaticism	98
Disposition to suicide; double homicide	100

Suicide preceded by homicide	102
Incendiaries	103
What is the fundamental quality of the disposition to murder, of the disposition to kill?	105
Seat of the carnivorous organ, and its external appearance in the human cranium	108
VI. Cunning, trick, tact, (<i>List, Schlawheit, Kluheit.</i>) History .	119
Natural history of cunning in animals and man	120
Seat of the organ of cunning, and the external character by which it is manifested	122
VII. Sense of property, instinct of providing, covetousness, pro- pensity to steal (<i>Eigenthumssinn. Hang zu Stehlen.</i>) His- tory of	128
Natural history of the propensity to steal	131
Natural history of the propensity to steal in disease, accompanied with a remarkable deficiency of intellect	137
Natural history of the propensity to steal in insanity	140
Of the innate sense of property	142
Property, an institution established by nature in animals	144
In man also.	144
It is the sense of property, or the propensity to provide for one's self, that is the fundamental quality from whence originates the propensity to steal	149
Seat and external appearance of the organ of property and of the propensity to provide for one's self. Modifications of the manifestation of this organ	150
VIII. Pride, hauteur, loftiness, elevation. (<i>Stolz, Hochmuth, Hersch- sucht.</i>) History of the discovery	156
Natural history of pride, hauteur, self-opinion, in a state of health	157
Pride, arrogance, haughtiness, love of authority in a morbid state	162
Seat and external appearance of the organ of pride, &c.	167
Of the instinct which directs animals in selecting the places of their habitations. (<i>Aufenthaltsinn</i>)	171
External appearance of the organ of height in animals	173
Is there any analogy between the instinct of height in animals, and pride or arrogance in man?	175

IX. Vanity, ambition, love of glory, (<i>Eitelkeit, Ruhmsucht, Ehrgeitz.</i>)	
History of the discovery	184
Natural history of vanity, of ambition in man	185
Vanity; love of approbation in animals	190
Alienation of vanity	191
Seat of the organ of vanity, and external appearance of this organ	191
X. Cautiousness, foresight. (<i>Behutsamkeit, Vorsicht, Vorsichtigkeit.</i>)	
History of the discovery	195
Natural history of cautiousness in man	196
Cautiousness in the state of disease	198
Seat and external appearance of the organ of cautiousness	202
Further consideration of suicide, and on one of the causes of its relapse and periodicity	205
History of a whole family of suicides	216
One of the causes of the recurrence of certain pathological phenomena, particularly mental alienations, and suicide arising from melancholy	217
Organ of cautiousness, continuation, natural history of cautiousness in animals, and the external appearance of its organ in them	225
Conclusion	229
Determination of the fundamental powers of the primitive qualities and faculties, and the seat of their organs	232
XI. Memory of things, memory of facts, sense of things, educability, perfectibility. (<i>Sachgedächtniss, Erziehungsfähigkeit.</i>) History of the discovery	233
Natural history of the sense of things, of educability, of the perfectibility of animals	238
Examination of the cerebral organization of animals, compared with their perfectibility; seat and external appearance of the organ of the memory of things, or the organ of educability, of perfectibility	245
Of the domestication of animals, and their disposition to be tamed	248
Memory of things, educability, and perfectibility in the human species	252
Seat of this organ in man	258
XII. Sense of locality, sense of the relations of space. (<i>Ortsinn, Raumsinn.</i>) History of the discovery	261

Natural history of the sense of locality in animals	264
On the migrations of animals	269
External appearance of the organ of locality in animals	273
Further exposition of the organ of the sense of locality, and its sphere of activity in man	275
On the love of travelling	277
Sense of localities in insanity and idiocy	280
Sense of order	283

OF THE FUNCTIONS OF THE BRAIN, AND THOSE OF EACH OF ITS PARTS.

IV. Instinct of Self-defence and of Property ; Disposition to quarrel ; Courage.

IN certain cases, it is much easier to discover the organ which determines a certain mode of action, than the fundamental quality or faculty itself. Actions that are the result of the extraordinary activity of an organ, are much more obvious than the primitive destination of that organ, and its ordinary mode of action. For this reason, I at first observed almost all the organs, and all the faculties, in their excessive activity. When faculties are once recognized as peculiar and independent, it is possible thence to infer by degrees, the primitive destination of an organ. The history of the discovery of the instinct of self-defence, and of property, and of its organ, will be better understood by the reader from the following observations.

History of the discovery.

Uncertain whether I should find, in the language, suitable expressions to designate all the fundamental qualities and faculties, I was curious to ascertain what faculties and qualities had attracted popular notice by their outward manifestations. I therefore collected in my house, quite a number of individuals of the lower classes of society, following different occupations, such as coachmen, servants, &c. I obtained their confidence, and disposed them to sincerity, by giving them beer, wine, and money, and when favorably inclined, I got them to tell me of each other's good and bad qualities, and in short, of all their most striking characteristics.

In their different communications, they seemed to particularly notice those who were always provoking disputes and quarrels. Individuals of peaceable habits they knew very well, speaking of them with contempt, and calling them poltroons. As the most quarrelsome found great pleasure in giving me circumstantial narratives of their exploits, I was anxious to see whether any thing was to be found in the heads of these *bravos*, which distinguished them from those of the poltroons. I ranged the quarrelsome on one side, and the peaceable on the other, and examined carefully the heads of both. I found that in all the former, the head, immediately behind and on a level with the top of the ears, was much broader than in the latter. On another occasion, I assembled separately those who were most distinguished for their bravery, and those most distinguished for their cowardice. I repeated my researches, and found my first observations confirmed. It was impossible for me to be deceived by the false ideas of philosophers, on the origin of our qualities and faculties. In the individuals I had to deal with, education was entirely out of the question, and the manner in which their character was manifested, could not be attributed to the influence of external circumstances. Such men are the

children of nature, yielding themselves unreservedly to their dispositions, and all their actions bearing the imprint of their organization.

I therefore began to conjecture, that the disposition to quarrel might really be the result of a particular organ. I endeavored to find out, on the one hand, men of acknowledged superior bravery, and on the other, men known to be great cowards. At the combats of wild beasts, at that time still exhibited in Vienna, there often appeared a first-rate fighter of extreme intrepidity, who presented himself in the arena, to sustain alone a fight with a wild boar, or a bull, or any ferocious animal whatever. I found in him the region of the head just pointed out, very broad and rounded. I took a cast of this head, and likewise those of some other *bravos*, that I might run no risk of forgetting their particular conformations. I examined also the heads of some of my comrades, who had been expelled from several universities for duel-fighting: One of them knew no greater pleasure than that of sitting down in an ale-house, and mocking the workmen who came thither to drink; and when he saw them disposed to come to blows, putting out the lights; and giving them battle in the dark, chair in hand. He was, in appearance, a small and feeble man. He reminded me of another of my comrades, a Swiss, who used to amuse himself at Strasburg, by provoking quarrels with men much larger and stronger than himself. I visited several schools, and had pointed out to me the scholars, who were the most quarrelsome, and those who were the most cowardly, and I prosecuted the same observations in the families of my acquaintance. In the course of my researches, my attention was arrested by a very handsome young woman, who, from her childhood, had been fond of dressing herself in male attire, and going secretly out of doors to fight with the blackguards in the streets. After her marriage she constantly sought occasion to fight with men. When she had guests at dinner, she challenged the strongest of them after the repast to wrestle. I likewise knew a lady, who, although of small stature, and delicate constitu-

tion, was often summoned before a justice, because of her custom of striking her domestics of both sexes. When she was on a journey, two drunken waggoners, having lost their way in the inn during the night, entered the chamber, where she was sleeping alone; she received them so vigorously with the candlestick, which she hurled at their heads, and the chairs with which she struck, that they were forced to betake themselves to flight. In all these persons, I found the region in question, formed in the manner above described, although the heads in other respects were formed quite differently. These observations emboldened me, and I began thenceforward to speak in my lectures of an organ of courage, as I then called it.

There soon after died a general, whose whole reputation was founded on his courage and love of fighting. I found in his head (Pl. lxiii, the organ v,) shaped as it is in the first-rate fighter at Vienna, spoken of above. My entire conviction was finally achieved by the cranium of the poet Alxinger, who was so destitute of courage, that his cowardice exposed him to considerable railery. Comparing his cranium with the preceding, (lxii.) what a difference in the development of the region V. The general's cranium, besides being very broad immediately behind the ears, also presents a round protuberance an inch in breadth. Alxinger's cranium, on the contrary, is not only very narrow in this place, but entirely flattened.

Natural History of Courage, or the Instinct of Self-defence and of Property.

In relating the natural history of this instinct, I shall combat some prejudices, that are generally received on the subject of the courage of animals.

Certain animals are charged with wanting courage, for manifesting fear when attacked by superior force, as if temerity instead of true courage, were the desired quality. Among the carnivorous animals, the dog is,

without contradiction, one of the most courageous. Before having experienced the superiority of the lion, tiger, and bison, he attacks them without hesitation, but let him once escape from the unequal combat, which exposes him to almost certain death, and he ever after flies at the approach of these terrific creatures. The wild-boar alone never learns to calculate his strength. The hare, pigeon, &c. are said to be timid; but hares, when they fight together, will frequently tear off whole strips of skin, and sometimes dismember one another. Observe two pigeons fighting, male against male, or female against female, and you will see them striking their wings together, struggling, and picking most furiously at each other with their bills. What creature is more valiant than the cock, yet he flies before the martin.

It is generally admitted that the carnivorous have much more courage than the frugivorous animals, but I shall try hard to prove the contrary. Hunters are perfectly aware that the wolf, unless excited by hunger, takes flight at the approach of the slightest danger. That powerful animal, the tiger, with the serpent's flexibility, and with incredible strength, armed too with teeth and claws, whose unexpected attack nothing can resist, cannot sustain his courage. The moment a herd of buffaloes observes him coming stealthily along, the old bull, the father of the family, comes forward, engages him in combat, and generally is the victor. In the arena of the combats of wild beasts at Vienna, a deer was once destined to be torn in pieces by a lioness; but the moment he saw the latter leave its lodge, to advance upon him, he put himself on his guard. The lioness walked around him slowly, when the deer, the moment he saw her intention, leaped upon her back, and beat her ribs vigorously with his feet, insomuch that they had considerable difficulty in getting the lioness back to her lodge, where she died three weeks afterwards. Shortly after a roe-buck was pitted against a lion. The former sprang with a sort of desperate courage on his adversary, but the disparity of strength and arms was such, that the

poor creature succumbed without the power of offering any further resistance. I have often seen a he-goat crush many a dog with his horns, and she-goats even defend themselves heroically against the dogs. Every body knows the courage of the chamois and the wild-goat, to which the hunter is often a victim; and who does not know the boldness of the squirrel, as well as the courage and mischievous daring of the rat? If beasts of prey, armed as they are, with claws and teeth, were also endowed with courage even to rashness, nothing could resist them. But, ordinarily, nothing less than hunger will induce them to risk a bold stroke.

These observations prove, that the instinct of self-defence is common to all animals; but it is not equally active in all species. Certain species live in peace and in society; while others, on the contrary, not content with repelling attacks, maintain constant war with their own and other species. Hence the difference between the manners of the sheep, horse, pigeon, tomtit, &c. and those of the morse, cock, cape-petrel, most of the fly-catchers, such as the red-throat, wren, &c. Many species of birds are even furnished with special weapons, such as spurs, &c.

The individuals of all species differ in regard to courage, according as the organ of self-defence and of property, is more or less developed. There are large and small dogs that avoid all fighting; while others think of nothing else, and will boldly attack the furious bull, and the wild boar foaming with rage. There are rams, he-goats, bulls, cows, pigeons, thistle-finches, who are continually fighting, either with animals of their own, or other species, and who attack and bite every thing they meet with.

Certain carnivorous birds, such as the *Falco pygargus*, *F. veruginosus*, *F. tinnunculus*, the *Lanius collurio*, as well as all the species of that genus, the *Tringa pugnax*, and *Larus cataractes*, are courageous and very quarrelsome. The *Falco Milvus*, on the contrary, is so timid, as to take flight, when attacked by a few crows, or even rooks. Among the little gnawers, none equals the

hamster for courage, even to rashness, while the guinea-pig of the same size, is very peaceful and timid.

Such a difference of manners cannot be attributed to education ; and it can only be explained upon the ground of an innate disposition, and consequently an innate organization. No one will maintain that it is ambition, cupidity, or fear of punishment, which inspires these creatures with courage, and impel them to fight. The first-rate fighter of Vienna, already mentioned, as well as those of Paris, have often assured me, that it is impossible to train for fighting, a dog that is cowardly by nature, such as the greyhound. It may happen, indeed, that a young inexperienced dog, like a conscript, at first manifests fear ; but the moment he is a little familiarized with danger, he is a ready-made fighter. I once owned a Danish dog, which, except myself and a little bitch, that was always with her, received with a growl every thing that approached him, and rushed upon it with fury. He had this habit from his youth, and neither caresses nor threats could break him of it. This dog never manifested the least instinct for the chase, and birds and mice might run round him without exciting his attention. A shaggy water-dog, a favorite of his master, who fed him well, was constantly seeking opportunities to fight in the streets, and every day he returned with new wounds. They tried shutting him up for weeks together, but the moment he was set loose, he sprang upon the first dog he met, and fought till he conquered him, or was obliged to quit himself. A wren in my aviary, masters all the other birds, who fear him, even the greenfinch, the gnat-snapper, and the turtle-doves. He attacks them with astonishing rapidity, and fights with the most obstinate courage. A white rabbit assumed the sole duty for two years of defending the tribe against the cats. He was constantly in a turmoil, and the moment a cat approached, he leaped upon him furiously, beating the ground with his feet. In barn-yards we always find some cock more valorous and quarrelsome than the rest. When a flock of wild beasts is menaced with danger, the most

intrepid are always found at their head ; and the herds of bisons and wild horses are always led by the boldest males.

The same differences are observed in the human species, as the facts already related sufficiently prove. Daily experience concurs with the results of history, in showing, that the disposition to quarrel and fight is often manifested at the most tender age, without the stimulus of example, and in spite of the education whose object is to repress it. Every one, who has been educated in a large family, or in public seminaries, must have encountered young people of this character.

Bertrand du Guesclin, constable of France, thought of nothing but fighting, from early childhood. He formed a regiment of children of his own age, and was styled general, and dividing them into companies, taught them how to form the line of battle. "There is not a worse little wretch in the world," said his mother ; "he always has some bruise, or a bloody nose ; always beating, or being beat ; he appropriates every thing he observes of a military nature."

I need not be told, that every soldier in an army displays the same courage ; that it can be excited at pleasure in the raw recruit. I am well aware, that the actions of man are much less the result of a single quality or faculty—the effect of a single organ—than those of the lower animals. I know also that an organ, which, in its ordinary state, acts but feebly, may be excited to much higher activity by strong drinks, warlike music, the hope of distinction, the love of glory, and by the very necessity of escaping from imminent danger ; but it is no less true, that in the bravest regiments, we meet with some soldiers more intrepid and rash than the rest. Wherever men are assembled together, there will always be found some disturbers of the peace, some quarrellers, who strive to gratify their passion, even at the expense of honor and duty. Savans, who are forever engaged in some little controversy, and impassioned pleaders, probably have this organ largely developed.

Derangement of the disposition to quarrel.

The phenomena of this instinct in disease, particularly mental derangement, also prove that it should be considered as a fundamental quality. There are individuals, who, when they have drank too much, or are suffering under some kind of irritation, such for example as that of cerebral inflammation, or that produced by certain poisons, become quarrelsome, while others in the same circumstances, are rather disposed to enjoy the pleasures of love, or perpetrate some kind of trickery. Recollect the case of the man who, all his life, was of a mild and peaceful disposition, till cured of a wound he had received on his head from a stone, when he became quarrelsome and inclined to fight.*

We have seen that the instinct of propagation and that of offspring, may degenerate into monomania. The same thing may happen to all the fundamental qualities and faculties, and very frequently does to the instinct of self-defence. I will cite a few cases from Pinel.

"A maniac of a mild and peaceable disposition, seemed, during his paroxysms, to be inspired by a demon of malice. He was then incessantly in mischief; shutting up his companions in their cells, teasing, striking and throwing among them some bone of contention to set them by the ears. Another example of this kind is worth relating; that of a person affected with a periodical insanity of the most inveterate description. The paroxysms ordinarily occurred once a month, and continued from eight to ten days, presenting the most striking contrast to his natural condition. During the lucid intervals, his countenance was calm, his aspect mild and reserved, his answers to questions, modest and highly judicious, and his manners urbane; his conduct

* Vol. ii. p. 202.

evinced strict probity, and even a desire to oblige others, and he expressed the most ardent wishes for his recovery. On the recurrence of the paroxysm, however, which was accompanied by a certain flush of the face, excessive heat in the head, and a parching thirst, his motions were rapid, the tone of his voice loud and arrogant, his looks full of audacity, and he felt the most powerful inclination to tease every one who came near him, and provoke them to fight, as long as breath remained in their body.”*

“Ought we not to refer to mania without delirium, (the hallucination of the English writers corresponds to the delirium of the French,) those turbulent, cross-grained characters, who manifest no alienation in other respects, and whom, they have preferred to seclude in lunatic asylums, rather than mix them up with criminals in jails and prisons. An old religieuse at the Salpêtrière was a striking example of this kind. Whenever a servant-girl approaches her to offer any service, she showered upon her the most outrageous and opprobrious epithets. The other insane were treated with no more respect, and menacing cries, transports of rage, and efforts to strike every thing around her, followed one another without cessation. When her food was brought to her at meal-times, she either indignantly threw it away, or concealed it, and then complained that they were trying to starve her to death. She delighted in throwing her clothes into the fire, and then crying out that she had nothing to wear, and was suffered to go naked. She never ventured to brave the authority of the overseer when he was present, but when absent, he was continually the object of her sarcasm. Such a firebrand of tumult and discord being dangerous to the welfare of the other inmates, it was necessary to confine her in a solitary cell, to which the outbreakings of her wild and savage spirit were afterwards limited.”†

* Sur l'aliénation mentale, p. 101.

† Pinel, l. c. 280.

“An only son of a weak and indulgent mother was encouraged in the gratification of every caprice and passion, of which an untutored and violent temper was susceptible. The impetuosity of his disposition increased with his years. The money, with which he was lavishly supplied, removed every obstacle to the indulgence of his wild desires. Every instance of opposition or resistance roused him to acts of fury. He assaulted his adversaries with the audacity of a savage; sought to reign by force, and was perpetually embroiled in disputes and quarrels. If a dog, a horse, a sheep, or any other animal offended him, he instantly put it to death. If he ever went to a fête or any other public meeting, he was sure to excite such tumults and quarrels as terminated in actual pugilistic rencontres, and he generally left the scene with a bloody nose. This wayward youth when unmoved by passions, possessed a perfectly sound judgment. When he became of age, he succeeded to the possession of an extensive estate. He proved himself fully competent to the management of it, as well as to the discharge of his relative duties, and was even distinguished for acts of beneficence and compassion. Wounds, law-suits, and pecuniary compensations were generally the consequence of his unhappy disposition to quarrel. But an act of notoriety put an end to his career of violence. Enraged with a woman, who had used offensive language to him, he pushed her into a well. Prosecutions commenced against him, and on the deposition of a great many witnesses who testified to his furious deportment, he was condemned to perpetual confinement in the Bicêtre.”*

On the subject of such cases, which are but too frequent, Pinel observes, that “daily experience shows the necessity of having seven or eight cells in a remote part of the hospital, where those inmates, who are not furious, but extremely turbulent and intractable, may be kept for

* Pinel, l. c. 156.

a certain time in a state of seclusion. Among these, may be ranked those who are not subjected to the general rules of labor, and are but little affected by the ordinary means of reform, but who are constantly in mischief, teasing the other inmates, and exciting among them some subject of contention.”*

These cases show, conclusively, that the instinct of self-defence may be irritated to excess, independently of all other qualities and faculties, so as to be converted into monomania—a phenomenon that would be impossible, if this instinct had not a particular and independent organ.

Fundamental quality of the disposition to quarrel and fight.

The reader is already aware, that it was impossible for me to discover any fundamental power in its primitive destination; and that at first, my attention has been always fixed on the extraordinary manifestation of a quality or faculty, and consequently on the result of an extreme development of an organ. The highest degree of action, of which an organ is susceptible, is nothing but a gradation of the fundamental power, but not this fundamental power itself. The fundamental quality or faculty is common to all the individuals of the species; but the degrees of manifestation vary from one individual to another, according as the organ is more or less developed. Setting aside all accidental modification, and attending only to that condition of this quality, which is common to all individuals, we shall arrive at the fundamental quality or faculty. As much must here be left to the sagacity of each individual, who makes it a subject of attention, there will always remain a great diversity of opinion, even among organologists,

* Pinel, l. c. p. 291.

as to the denomination of the fundamental qualities or faculties.

The instinct which disposes to quarreling and fighting, may be referred, in all its modifications and degrees, it seems to me, to the instinct of the defence of self and property. As soon as the necessity exists, in man or brute, of providing for self-preservation, for having a habitation, a male or female, children, or young, or property of any description, they must be also provided with a quality, which will prompt them to defend it against external violence. The preservation of the individual alone, even renders the existence of this instinct indispensable. Thus far, however, we have seen nothing of the disposition to quarrel and fight. This supposes a higher degree of activity of the fundamental quality—of the instinct of the defence of self and of property, whose organ is capable of different degrees of development. The individual who, with a moderate development of this organ, merely defends himself and property, will commence an attack, the very moment the organ becomes more developed, or more strongly excited. As this development or excitation increases, the disposition to quarrel becomes stronger, till it degenerates into a fixed desire, a necessity, a passion. Quarrels and battles are sought for, dangers are loved, perils confronted, and even created. Here then is a desire, a passion, which has nothing in common with that of the amative instinct, or the love of offspring, or of attachment, and which has its seat in the brain. If we call the fundamental quality, in consequence of this excitation, or excessive development, the disposition or passion for quarreling and fighting, we should be guilty of no less an error, than if we derived the name of the instinct of propagation, from the most depraved tastes into which it may degenerate.

As every different degree of development of this organ will always exist; so will there always be men and brutes, whose supreme enjoyment consists in dissension, quarreling, and fighting. So long as man exists, so long will there be disputes, quarrels, and wars.

Of the seat of the organ of the Defence of Self and Property.

I have already remarked, that in all courageous, rash, fight-loving people, there is a round protuberance behind and above the ears. Its situation on the cranium is at the posterior-inferior angle of the parietal bones. When no such protuberance is found in people of this disposition, we shall, instead thereof, find the distance between the corresponding organs much greater than in timid people. In man, the organ is situated nearly an inch behind the ear, and on a level with its superior margin. We must take care not to mistake for it, the mastoid process, which is a little lower down, and directly behind the ear.

My observation is confirmed by the heads of all who have been distinguished for courage; of robbers, who have committed theft, accompanied by violence and danger, in preference to simple larceny; and of all those who, for accomplishing perilous enterprises, snatch the reward from others who conceived the project, but wanted the requisite spirit and daring to execute it themselves. All soldiers distinguished for valor, so far as I have had opportunity to examine, have this organ very large. I have also found it very prominent in highway robbers, &c., notorious for their intrepidity. I am indebted to the politeness of Baron Larrey for the cranium of a soldier of the guard, who was singularly fond of fighting; he had killed several in duels, and finally died of a stab in his abdomen. The diameter of this skull, from the posterior-inferior angle of one parietal bone to that of the other, is very great. It is still more so in the head of Bouhours, who was guillotined several years ago, for murdering a number of people with a hammer. In Prof. Blumenbach's collection, we saw two crania, one of a young man, the other of a woman, in both of which the organ in question, was very little developed.

Otto Fabricius relates, that the race to which these crania belong, is a very cowardly one, and their character, as given by David Kranz, is in perfect conformity with their organization.

Certain savage races seem to have a confused notion of some advantage in great breadth of this region of the head, and are in the habit of endeavoring, by means of pressure, to increase the breadth of their children's heads between the ears, in the belief that they will thereby become better fitted for war.

In the lower animals, the situation of this organ requires particular investigation, because it varies with the structure of the head and the relative position of the brain. Horses, whose ears are set very near each other, are skittish and timid, while those whose ears are far apart, at their base, are bold and steady. Dogs, also, that are incapable of being trained to fight, have the head narrow above and a little behind the ears; while the heads of those that are rashly bold, are broad in this region. Amateurs of pigeons have, long since, made the same observation upon these birds. In the first interview I ever had, in my travels, with a devoted amateur of cock-fighting, he thought he was confiding to me a great secret, by telling me that, by the sight alone, he could distinguish good fighters from poor ones, and pointing out, as the distinguishing mark, a great breadth of the head, a little in front of the ears. This man had no knowledge of my discoveries. At this period I had already made this observation on barn-yard cocks, and afterwards confirmed it by comparing them and their hens, with game-cocks and their hens. Dr. Spurzheim has had frequent opportunities, in England, of repeating this observation on the game-cock. The hen of this variety have such an animosity towards all other hens, that it is impossible for them to remain in the same yard with the former. The rook and crow have the head much broader in this region, than many species of eagles and falcons; and what creature is more courageous than the large black crow (*corvus corax*)? The

moment I put my eye on the head of a wren, his indefatigable temerity was explained to me. Organology can alone explain, how the wild rabbit dares to pursue, and succeeds in vanquishing the hare. It is the same conformation of the head, that makes the instinct of self-defence so active in the hamster, and so many other frugivorous animals, and impels them to engage in the most obstinate combats.

Opinions of some other Physiologists on the origin of Courage.

It cannot be supposed, that, before the discovery of organology, the different qualities and faculties should have been laid down and described, and the common errors on this subject abandoned. But we cannot conceive, how physiologists of the present day can still have recourse to assertions entirely gratuitous, to explain the origin of the faculties. Richerand thus expresses himself on the subject of courage.

“The heart is likewise larger, stronger and more powerful in courageous, than in weak and timid animals. This is the first instance of a moral quality depending on a physical disposition of parts, and is one of the most striking proofs of the influence of the moral on his physical nature. Courage arises from the consciousness of strength, and the latter is in proportion to the activity with which the heart propels the blood towards all the organs. The inward sensation produced by the afflux of the blood, is the more lively and the better felt, when the heart is powerful. It is on this account, that some passions, anger, for example, by increasing the action of the heart, increase a hundred fold both the strength and courage, while fear produces an opposite effect. Every feeble being is timorous and shuns danger, from an inward consciousness that he does not possess sufficient strength to resist it. It may perhaps be objected, that some animals, as the turkey-cock and ostrich, have less courage than the smallest

bird of prey, and that the ox has less than the lion and many other carnivorous animals. What has been said, however, does not apply to the absolute, but to the relative size of the heart. Now, though the heart of a hawk be absolutely smaller than that of a turkey-cock, it is nevertheless larger in proportion to the other parts of the animal. Besides, the bird of prey, like the other carnivorous animals, owes his courage, in part, to the strength of his weapons of offence.

Another, more specious but not better founded objection, is drawn from the courage, manifested on certain occasions by the most timid animals—by the hen, for example, in protecting her young; from the courage with which other animals, pressed by hunger or lust, surmount all obstacles; and particularly from the heroic valor of men of the feeblest bodies. All these facts, however, are only proofs of the influence of the mind on the body. In civilized man, the prejudices of honor, considerations of interest, and a thousand other circumstances, change the natural inclination, so as to make a coward of one, whose strength would induce him to brave all kinds of danger; while, on the other hand, men, whose organization should render them most timid, are inspired to perform the most daring actions. But all these passions, all these moral affections, operate only by increasing the action of the heart, by redoubling the force and frequency of its pulsations, so that it excites the brain or muscular system, by a more abundant supply of blood.” *

This whole passage is false. Courage never arises from the consciousness of strength. There is no one who is not acquainted with very strong men, who are not only peaceable, but even timid. Even in cases, where every thing appears to depend on the bodily strength, the strongest are not the most courageous, intrepid, and rash. The largest dogs, the greyhound, for example, are

* Elements of Physiology, sect. li.

the greatest poltroons; they never can be trained to fight, because they fly at the first attack. Even among mastiffs and common dogs, the smallest are often the most courageous and the most bent upon fighting. I have, at this moment, a dog of one of the smallest breed, reared by girls, who, the first time he met another dog, attacked him most vigorously. He is absolute master of every dog at all near, or even somewhat above his own size, and when he is sometimes thrown down by a much stronger dog, he is never intimidated, but gathers himself up instantly, and renews the attack with increased spirit. The wild rabbit, let me repeat, though smaller and weaker than the hare, will, when they are inclosed in the same park, drive him away and put him to flight. The game-cock, as has been already mentioned, is smaller than the barn-yard cock, though he attacks and vanquishes him. Every day I see, in my yard, the smallest English cocks fighting with large ones of the ordinary kind, and very often they are successful. If, therefore, to possess courage, something more is requisite than bodily strength, Richerand's objection is without the slightest foundation, and must, consequently, fall to the ground. I have elsewhere cited some examples of men known in history for their courage; such as Attila, Alexander, Pepin-le-Bref, who were of small size, and the reader will recollect many other similar cases.

When Richerand says, that the heart is larger, stronger, and more powerful in the courageous than in feeble and timid creatures, he advances an assertion entirely gratuitous, which he has not taken the trouble to support by a single example, drawn from comparative anatomy. It is true, the size of the heart bears a certain proportion to the stature, or to the venous and arterial system; but this proportion has no relation with any quality or faculty whatsoever. The heart of the hare is much larger than the biggest cat's. As for the rapidity of the heart's pulsation, I defy Richerand to find them more rapid at the sight of peril, in the hero than in the coward. "We see," says M. Nacquart,

“that in brutes, the disposition that impels them to kill, is nearly related to that of fighting, and that they are even confounded together. The dog has not learned to distinguish the disposition to kill from the disposition to fight; and with the wolf, to attack and kill are one and the same thing. Thus, the two dispositions have not an independent existence, so long as the individual enjoys moral liberty to any extent. It is as if we should consider physical love a different propensity from that of moral love, because, in man, there is a well-marked line of separation between them, and one which seems apparent even in brutes at all capable of choice; whence we conclude, that the disposition to fight, is a modification of that of murder.”

I have elsewhere said, that a living being is capable of being determined by motives, the number of which depends on the size and quality of the brain, and on the number of organs to whose influence he is submitted. Man is not sensible to the pleasures of sensual love exclusively, but may also be captivated by the charms of beauty, by the attractions of virtue, &c. Here is the ground of difference between physical and moral love, though these two species of love are much more nearly related to each other than many people imagine. Why is not the Corypheus of Platonic love inflamed by the ravishing charms of moral love, when seen in a man or an old woman? Is not what we call moral love chiefly an illusion, that ordinarily finishes where physical love begins?

If M. Nacquart had been acquainted with the natural history of the instinct of the defence of self and property, and with all its different manifestations, as I have pointed them out, he surely would not have admitted the disposition to murder and the instinct of self-defence to be only modifications of the same fundamental quality. I will not stop to cite the thousand of examples furnished by the animal kingdom, but will content myself with recalling to the reader what history teaches us respect-

ing the manner in which heroes, equally well known, were accustomed to act.

“Charles XII., who was inflexible even to obstinacy, and rashly courageous, was a scourge to the human race; thousands of men destroyed by fire and sword, was the result of his warlike ardor. Pepin-le-Bref was no less courageous, but was not cruel. Du Guesclin, who thought of nothing but fighting, even from early childhood, was, like Turenne, humane and generous. He always protected women and children, too often the victims of sanguinary fury.” Does not experience show, that the cowardly, when in power, shed blood in torrents, without necessity or object; while, ordinarily, the most gallant prevent every unnecessary effusion of blood? Besides, the organs of fighting and of murder are by the side of each other; they render mutual aid, and many acts are the result of their simultaneous activity. It is not astonishing, then, that the mingled functions of these organs should appear to be only a modification of one or the other of these two propensities. Thus we see men, with the propensity to kill very energetic, without having courage; and some with indomitable courage, without the slightest inclination to kill. Thus, too, there are dogs, some frugivera, and other animals, who are very courageous, without evincing any admixture of the murderous instinct. We have seen, that, notwithstanding the instinct of propagation, a man does not love all women indiscriminately, nor one woman, all men; and that, notwithstanding the instinct of love of offspring, a mother does not love all children equally alike. So, a courageous man does not brave all kinds of danger with equal intrepidity; and frequently one who fears a sword, will use a pistol with equal boldness and valor.

The notion is, that courage is produced by the fear of dishonor and disgrace, by ambition, jealousy, example, &c.; in short, by a variety of motives. All these different motives may indeed stimulate courage, where the organ exists; but, where the fundamental quality

does not exist, for want of a suitable organization, no motive, nor any other untoward irritation, can give rise to it.

Cowardice.

Is cowardice, or timidity, the consequence of a small development of the organ of self-defence, or does it proceed from the action of some other organ? There can be no doubt, that caution may sometimes moderate the desire to fight; but I believe that this same quality may, just as often, excite us to defend ourselves, and overthrow an enemy. Experience shows, that men and brutes eminent for caution, are no less courageous than those who want it; whence we may conclude, that cowardice proceeds rather from a too feeble development of the organ of self-defence, than from the influence of caution. At any rate, caution will never produce fear, except so far as it makes known the superiority of an adversary, or when the organ of self-defence is but little developed. Spurzheim, however, not coinciding in the belief, that fear originates from little development of the organ of courage, has opposed this view, and endeavored to prove, that fear depends rather upon the organ of caution. This induced me to append to the third volume of my large work, some remarks on negative qualities, and on fear, as follows.

I call *negative qualities*, those that are not the result of activity, or of a fundamental quality, but which take place when a fundamental quality is inactive, or entirely deficient. A giddy and heedless disposition must be the necessary result of a want of cautiousness: it is therefore a negative quality, and is derived from no active fundamental quality. So, also, humility and modesty are the negations of pride and assurance. Chastity, while a man suffers no temptations, and feels no thorn in the flesh, is but a passive quality, without merit; it becomes a virtue only, when, by the force of elevated motives, the individual subdues his de-

sires, and restrains his inclinations. Modesty and humility become meritorious, when they result from reflection on our own weakness and the narrow limits of our knowledge. Cowardice is always a passive or negative quality. Fear is sometimes negative, and sometimes positive; the most courageous will fear when they find themselves in the presence of an enemy, or of a danger superior to other powers. The dog most eager in the chase, will recoil before the formidable weapons of the tiger. Here, fear is a matter of calculation, a consequence of caution. A very high degree of courage, joined to a great deficiency of cautiousness, makes the rash man rush into invincible danger. But he who fears a danger, or an enemy, which the least effort would overcome, is a timid, cowardly, pitiful creature; and these qualities certainly have not their source in cautiousness.

Spurzheim considers fear to be an affection of the sentiment of cautiousness, and does not believe that the want of courage can be the cause of fear. He cannot comprehend any such thing as negative qualities. The absence of a faculty, he says, may modify the action of the other powers, but can never produce a positive sensation. A want of courage, he thinks, renders a person peaceable, but does not inspire fear; for, if this were the result of the absence of courage, he cannot comprehend how one may, at the same time, be courageous and in fear. Besides, there are some species of animals and some men, that experience these two sentiments. The stag is both timid and courageous.

If the absence of a faculty never produces a positive sensation, Spurzheim is wrong in considering fear, under all circumstances, to be a positive sensation. When we say that a man or brute is timid, we do not necessarily mean, that, at this very moment, he is agitated with fear, as people are affected with anger or fright. We mean by this expression, that he is a timid, cowardly man, or brute, as the case may be; and that such are more easily made to fear, than the courageous. If a deficiency of courage merely, makes a man peaceable, without giving

rise to fear in the presence of danger, I wish to know what are the qualities, that sometimes produce an aversion to women, even to abomination, if it be not the want of physical love? What are the qualities, too, that create an aversion to music, if it is not a want of the musical talent? or, give rise to erroneous judgments, if it be not a want of intellect? or excite disgust at the sight of food, if it be not a want of appetite, or some defect of the digestive powers? How can Spurzheim, upon his hypothesis, conceive of hatred, calumny, cruelty, imbecility, since none of these qualities arise from any fundamental power?

To me, these phenomena are perfectly intelligible. Outward objects are a source of pleasure, only so far as there exist certain relations between them and us, established by means of the cerebral organs. For this reason, when in the glow of youthful strength and health, we are pleased and charmed with a thousand things, which, when our powers have begun to decay, are matters of indifference to us, and excite even an aversion, which, when the mind is peculiarly depressed, proceeds to a distaste for life, and a disposition to suicide. When certain objects have lost their former relations to us, they are no longer in harmony with our spirits, and henceforth there succeed estrangement and aversion. Who has not learned from experience, that a surfeit of certain enjoyments is followed, not only by indifference, but by a real disgust for the same things that, a little before, were the objects of our most ardent wishes. In the same manner, when our limbs are fatigued, we feel an aversion to travel. We may say, with Bonald, that those who have no taste for metaphysics, mathematics, &c., are musical instruments, that have not their complement of strings.

Finally; if cautiousness be the source of fear, the heedless must always be exempt from this emotion, and fear will be in direct proportion to cautiousness—a position which is constantly belied by experience. Spurzheim cannot understand how one can be courage-

ous and timid at the same time, if fear be the result of the absence of courage. But why does Spurzheim here neglect the principles on which, in other places, he insists so strongly and so justly too, that actions are rarely the result of a single organ? Admitting this principle, and this part of the objection is already answered by our remark, that the most courageous men and brutes do not, on that account, lose the power of measuring their own strength with that of their enemies. Armies composed of men renowned for courage, have been seized with a panic: has not the intrepid Roman also sacrificed to Fear?

M. Demangeon, with inexhaustible perseverance, drives away at the question, whether fear proceeds from a want of courage, or of some other faculty, and whether there is a special, unique organ of courage. With the whole force of his military talents, he directs against me a war of extermination. "Courage, therefore," he concludes, "does not belong to a particular organ, and this conclusion is derived from Gall's own acknowledgment." As I have engaged to answer all objections, the reader must pardon me, if I detain him too long, perhaps, with this formidable dispute. "We have already seen," says Demangeon, "that Gall founds negative qualities upon the absence or weakness of organs, and in the following words, we have his views of fear. [He here quotes my own words a little altered, from, "If a deficiency of courage makes a man peaceable, to "we feel an aversion to travel."] Gall adds, that "cowardice is always negative; that fear is sometimes negative, sometimes positive; and that the most courageous are afraid, in presence of an enemy or danger superior to their strength."

Demangeon begins his attack, by quoting from Spurzheim, who says, "Let us suppose, that the two expressions, to be a coward, and to feel fear, are synonymous; still I neither see that we can therefore infer, that fear is negative, nor, that the knowledge of danger and the sensation of fear take place in the same faculty. I,

however, conceive that the knowledge of any danger may affect the sense of circumspection, in a manner to which the name fear is applied, just as it may excite courage, and make a person fight with fury. Neither courage nor circumspection know the danger nor reflect on it. Sometimes the most innocent and harmless things inspire fear. Any one endowed with courage, self-esteem, acquisitiveness and firmness, if his circumspection be considerable, will feel less fear than another with smaller circumspection, and deficient courage, self-love and firmness. The reader must also bear in mind the meaning, which I attach to the term affection, and remember, that affections do not depend only on the different degrees of activity of the faculties; that the sense of touch, for instance, though obtuse, produces the sensation of itching; that, in the same way, fear is an affection or quality of circumspection; and he will perceive that Gall's reasoning, when he objects that the careless, upon my views, must be entirely exempt from fear, does not refute my opinion." *

Because I said, what all the world knows, that the most courageous being may sometimes feel fear, why does Spurzheim suppose, that, to feel fear, and to be a coward, are synonymous expressions? I do not believe, any more than he, that the knowledge of danger and the sensation of fear, take place in the same faculty; but I conceive, as a thing of necessity, that fear is an affection of the organ of courage, and not at all of the organ of circumspection; for, it would naturally follow, that the more circumspect a man is, the more fear he will feel,—and the more careless he is, the less fear he will feel,—circumstances not at all confirmed by experience. One of my nephews is as destitute as possible of circumspection, yet he is exceedingly timid, and the greatest coward imaginable. He is ashamed of it himself, and though he may be well enough convinced that, in certain

* Phrenology vol. i. pp. 204, 205.

circumstances, there is nothing to fear, he is none the less frightened, and cannot help growing pale and trembling. Nothing, he says, excites his compassion so much as a timid creature, for he knows how painful the sensation is. How, too, will Spurzheim apply his reasoning to those animals, which are sometimes cowardly, sometimes fearful, and sometimes courageous?

Demangeon still has recourse to Spurzheim, who adds, says, he, that if fear resulted from the absence of courage, we could not conceive how one could be timid and courageous at the same time; and also, that this double state of fear and courage, sometimes experienced at the same moment, may be easily conceived, if we make it result from the simultaneous action of circumspection and courage. He then continues as follows. "Let us still examine whether the analogies, quoted by Gall, refute my opinion on the origin of fear. He compares fear with fatigue, disgust, and other sensations, which result from a satiety, or an exhaustion of certain faculties. Will he then maintain, that fear is ever the result of courage when exhausted? He compares it also with the inactivity of faculties, with imbecility, and with the imperfect functions of the intellectual faculties, or false judgments. None of these comparisons, except that with imbecility, is conformable to the definition given by Gall of negative qualities, among which he includes fear, hatred, calumny and cruelty. Several persons are fond of reasoning, but their conclusions are false; others are fond of singing, and making melodies, but cannot produce harmony. False judgments, therefore, are not the effect of an inactive state of the faculties." *

I reply, that we never are timid and courageous at the same moment, but that we may feel courage and fear at the same moment. I was, one day, walking in a by-path, from which there was no opportunity to escape, either to the right or the left; and while least expecting

* Phrenology, vol. i. p. 203.

it, an ox rushed furiously towards me. I certainly was frightened and felt fear, but my courage did not forsake me. Luckily, I instantly found a pretty large stone, which I threw at him, and struck him in the forehead. Surprised and stunned, he turned up the road and went away. My fear and the ox's too was a positive fear, since neither of us wanted courage, but each had a powerful enemy to contend with. Now it is true, that if fear resulted from an exhaustion of courage, as these gentlemen make me say, this double state of the organ of courage would be impossible; but not so, if, in these cases, fear is nothing but an affection of this same organ. This affection may indeed be produced like courage itself, by circumspection and a thousand other motives; but no one can confound such fear, in a courageous man or brute, with the absence of courage, with cowardice, or faint-heartedness, which are purely negative qualities, and which certainly have not their origin in circumspection.

Every thing that Spurzheim has made me say in this passage, is pure fiction. He applies to our discussion on fear, what I have said to render my ideas on negative qualities more intelligible. Nowhere have I compared fear with fatigue or disgust, nor with any sensation whatsoever resulting from satiety, or from the exhaustion of certain faculties. I have expressly copied my own words, without addition or diminution, and I seek in vain for any thing that will bear the construction, that fear is the effect of exhausted courage. Neither can I find that I have compared fear with false judgment. I said, indeed, that the inability of judging correctly results from a want of intellect. As to hatred, cruelty, calumny, &c., I would ask how Spurzheim explains them upon his theory, without examining whether these modes of manifestation are purely negative, or the result of the influence of several organs, or simple affections of certain organs. I merely recollect, that Spurzheim himself derives malice from the small development of benevolence. I believe it was cautiously remarked,

in my large work, that, "sooner or later, and sometimes in the least important circumstances, we shall discover in persons, in whom these cerebral parts are but feebly developed, a malicious, hateful, vindictive, ungrateful and slanderous character. Whether the reason is, that, in such cases, there exists no organ whose activity can maintain the balance of the other organs, and that thus selfishness predominates; or, that the small development of this cerebral part, gives rise to a hateful disposition, it is always certain, that persons thus organized, unless motives of an elevated kind come to their aid, are never capable of enduring benevolence." *

Demangeon now appears alone on the field. "It is necessary," says he, "to know and appreciate a danger or a misfortune, in order to fear it, and therefore infants, idiots, fools, and the new-born young of animals, feel no fear, or not the same fears as other men and old animals, although in them there is an absence of courage. So far from being the effect of exhaustion or inactivity of an organ, as Gall pretends, fear results from the excessive activity of certain faculties, which presage evils from real or imaginary causes; for, it cannot exist without an object; that is, we cannot be in fear of nothing. This is why women, young persons, the subjects of hysteria, hypochondria, or any other nervous affection which increases the nervous sensibility, as well as those who possess a highly excitable imagination, easily sacrifice to fear. It may therefore be the result of the activity of all the different faculties and sentiments, that put us in relation to objects that appear to menace our existence, or happiness. Spurzheim, therefore, is undoubtedly more consistent, and nearer the truth, than Gall. Still he attributes too much of this sentiment to the organ of circumspection, which, by enabling us to foresee a possible danger, and prepare the means of escaping it, is as likely to confirm as to depress our courage, as

* Tome iv. p. 218.

when we traverse a forest by night, with or without arms."

It seems that Spurzheim and Demangeon think they have found a powerful argument against me, in the expression, *exhaustion of the organ of courage*; since they are incessantly attributing to me an idea which no where exists in my works. It is by no means true, that it is necessary to know and appreciate a danger, in order to fear it. A coward may be well convinced, by reasoning, that he has nothing to fear, without being any the less liable to fear and tremble. Do we not every day see people quaking with nervous agitation at the sight of a spider, or a mouse; at the sound of thunder, or of the rustling of the wind? How often do we see children crying at the sight of a stranger? Certainly, new-born children and brutes feel no fear; for, fear being an affection of the organ of courage, it is at least requisite that this organ should be developed to a certain degree, before it can be affected in a certain way.

"If our authors," continues Demangeon, "had admitted an organ or instinct of self-preservation, (which they might have admitted with as much as, and more reason than many others, since this instinct is general, and graduated upon a particular disposition in all species and individuals; since its manifestation disappears, like that of others, in certain diseases and under certain circumstances, and is as essential to the end of nature as any other,) we might derive fear and courage from it chiefly, admitting other faculties to choose the means of preservation. We could thus better explain, what these authors have not at all done, why the same individual is timid or courageous, according to the different positions in which he may be placed; and why, when we perceive the folly and danger of the suggestions of fear, for personal safety, despair awakens our courage by thinking of acts of heroism, as is the case with the modern Greeks, and other oppressed people." There, then, follows a long enumeration of cases, where men, nations, and armies have been courageous or in fear, according

to the difference of circumstances ; and M. Demangeon concludes, that courage depends on all the faculties which enable us to judge of our position, and of the means of extrication.

Undoubtedly, the other organs may furnish motives both for courage and fear ; otherwise the poltroon would never manifest a spark of courage, when opposed to a still greater poltroon than himself ; and the courageous man would never be intimidated by an enemy, however superior he might be. Fear and courage are therefore, in certain cases, a matter of calculation ; but, without the organ of courage, no imaginable circumstances could create courage in any of its forms, any more than a man or woman could create the sexual passion, without a particular organ therefor.

Demangeon would adopt other notions on the origin of courage and fear, if he would reflect, for a moment, upon the different conduct of the courageous and the cowardly, in perilous circumstances. The poltroon takes flight, abandons his enterprise, resigns himself to despair, submits, and dies like a poltroon, as he is. The courageous man resists, his spirit is roused, and the more imminent the danger, the more boldly and perseveringly does he contend with it ; and if he must succumb at last, he avenges his defeat by the death of his enemies. Behold those young conspirators, whom they are leading to the scaffold ;—some are fainting and bathed in tears, while others brave death, and throw themselves under the murderous axe, as if they were going to fight the enemies of their country. To go no further for examples, take some specimens from the adventures of my youth.

My fellow-pupil Scheidler, the two daughters of the overseer of the Garden of Plants at Vienna, and myself, were one day botanizing. On our return, we were obliged to traverse by moon-light a forest, where, the evening before, a miller's boy had been murdered. Suddenly four men were seen approaching us, each with a sabre in his hand. "My God, my God," cried the young

ladies, "we are lost." I instantly picked up some stones, with which I filled my pockets, and keeping two in my hands, I enjoined upon Scheidler to throw sand in their eyes, in case I engaged with them. Having placed the ladies behind us, I waited with firmness for my four assassins to come up; but they being apparently as much frightened as ourselves, took the other side of the road, without saying a word, and pursued their way. Such a denouement made me laugh most heartily. Proud of my bravery, I offered my arm to the trembling ladies; but where was Scheidler all this time? At the approach of the men, he sunk down on the ground, and crept into the bushes. Certainly, I too was afraid, both for myself and the young ladies; but which of us was courageous, and which a coward? On the same occasion, he returned a minute afterwards accompanied with five students. When we had gone nearly a league from Vienna, we heard, at a distance, a great uproar and cries of distress. What was to be done? Should we continue our route, or return to the nearest village? Four of our companions returned, myself and another determined to pursue our course to Vienna. Having reached a piece of woods, we observed people running this way and that, in all directions. Being well provided with stones and sand, we marched on steadily and slowly, while the people ran by, as if frightened, to the right and left, and suffered us to pass unmolested. A quarter of a league further on, the people of a tile-kiln came out to see who we were. I had often got a bowl of milk of one of the women, and when they recognized us, we were congratulated on arriving safe and sound, since, a butcher had been murdered just before, near the kiln. Here again, we both felt fear—a fear of calculation—but we were not poltroons, like those who had deserted us, since their fear arose from want of courage.

"Fear or terror," continues Demangeon, "causes a whole army to shake and tremble before the battle, and the fall of a chief damps courage in the midst of its

efforts ; and this, according to Gall, must result from the exhaustion or absence of the organ on which he makes courage depend. To save his organology, we must admit effects without causes ; for, to attribute a sinister presentiment which is deduced from a precipitate judgment or from reflection, to a negative cause, is to attribute it to a nullity of cause, or, in fact, to no cause at all. It must be admitted, that a prejudice like this, so strong as to resist all evidence, in order that a favorite system may suffer no disturbance, is not just the thing in a physician ; and Gall would do well to consider, lest, in charging his opponents with bad faith, this reproach may attach to himself ; for, no one has shown more obstinate adherence to his errors, than himself."

That Demangeon, in writing this passage, felt a little turning of the stomach, appears from a foot note appended to the words, *it is not just the thing in a physician*. I will pardon him therefore, for confounding *obstinate adherence to his errors*, with *bad faith*. So long as the facts that support my propositions are attacked by nothing but tangled reasoning, I shall obstinately maintain them. But whenever I find myself opposed to nature, I shall abandon them at once, notwithstanding the customary charge that is always ready, of versatility of opinion. It is bad faith to put into the mouth of an opponent expressions he never used, and torture his words in such a manner, as to make his meaning absurd. For instance, when it is said that, according to Gall, fear or panic results from fatigue or absence of the organ on which he makes courage depend, they are as guilty of bad faith, as if they had said, that, according to Gall, the impotence that suddenly succeeds the most ardent desire, in consequence of the discovery of some disgusting circumstances, results from the fatigue or absence of the organ in which he makes the sexual passion depend. It would also be bad faith, if, after all that Gall has said of the influence of circumstances upon the activity or inactivity of the organ of courage, they should still charge him with the position, that the danger of the

child could not arouse and put in action the mother's organ of courage; that confidence, hope, honor, excitement, denial of every thing for the sake of the favored object, such as the object of a passionate love, a child, a husband, a dear parent, a benefactor, or one's self—objects that Demangeon alleges to be the principal elements of courage,—could not renew a courage, ready to yield.

“That Gall,” continues Demangeon again, “may try no longer to sustain the opposite of the truths I establish, I mean to confirm them by proofs which he has furnished himself, without wishing or even suspecting it. He says, that *we begin and remove one obstacle after another in succession, but that we recoil, on the contrary, before an imposing mass of difficulties; that the most courageous feel fear, when in the presence of an enemy, or a danger superior to their strength; that the most resolute dog retreats before the tiger; and that then fear is a matter of calculation, the consequence of circumspection; he admits, that fear is sometimes negative, sometimes positive, but that cowardice is always passive, and a negative quality.* All this now is contradictory, for if fear may be a matter of calculation, it is impossible for courage not to be another calculation based upon a different judgment; and then it would be wrong to admit an organ for courage, or else one should be admitted for fear also. As he does not explain, how one kind of fear differs from another, it is to be believed that he is no stranger to positive fear,—to that which is a matter of calculation, and which causes one to retire before a difficulty. If negative fear is courage, as negative courage is fear, all we can say is, the proposition sounds very much like nonsense, and perhaps it is because Gall was aware of it himself, that he avoids explanation. In no case can we consider functions to be negative qualities, in his sense, by making them result from absence or inactivity of organs. To admit that fear is sometimes a matter of calculation, is to yield us considerable, since it cannot but be admitted,

also, that, with more favorable chances, courage would have been the result; or, in other words, it would be the effect of the combination of many faculties, which compare the means of attack and defence with obstacles and resistance, and thence deduce the chances of success, according to the degree of prudence or temerity. We are discouraged by fruitless attempts, and encouraged when undeceived respecting imaginary difficulties. We say of one, who undertakes more than he is able to perform, that his courage is greater than his strength, or his prudence; because the principal elements of courage are hope and confidence; otherwise, it would be nothing but folly and rashness,—two qualities which Gall derives from the too partial exercise of faculties. Courage, therefore, does not belong to a particular organ, and this conclusion is deduced from the acknowledgments of Gall himself.”

All that I have said, in the passage quoted by Demangeon, is perfectly in accordance with nature and daily experience. I not only admit, but will maintain, that fear is sometimes negative, and sometimes positive; and that cowardice is always passive, and a negative quality. Where does Demangeon find the contradiction? True, fear and courage may be a matter of calculation, without there being a particular organ for fear. A danger beyond my whole strength, reduces my courage to a reasonable fear—to a fear of calculation. Throughout my long paragraph on negative qualities, and in that quoted by Demangeon, the difference between positive fear, or the fear of calculation, and passive fear, or cowardice, is clearly explained; so that I still have reason to charge Demangeon with bad faith, in saying that I do not explain how one kind of fear differs from another. When he says, that the principal elements of courage are hope and confidence, the remark is true only in the sense, that courage inspires hope and confidence, and that cowardice paralyzes the strength which would be more than sufficient to surmount the danger. Every day I see timid persons getting much further out

of the way of the carriage, than is at all necessary, or going back while in the act of crossing the street, when it would be much shorter to continue on. Why do these persons want confidence? Because they have no courage. Courage therefore belongs to a particular organ, and this conclusion is not based upon sophisms, but upon the visible and palpable difference between the crania of courageous men and animals, and those of cowardly men and animals.

“In the following passages,” continues “Demangeon, he proves that cowardice is not negative, while endeavoring to prove the contrary. ‘When we say, that a man or brute is timid, we do not necessarily mean, that, at this very moment, he is agitated with fright or anger. We mean by this expression, that he is a timid, cowardly man or brute, as the case may be; and that such are more easily made to fear, than the courageous. Armies composed of men renowned for courage, have been seized with a panic: has not the intrepid Roman also sacrificed to fear? If a man or brute is timid or courageous, only at certain moments and in an accidental manner, it is necessary that his fear should be awakened by particular circumstances; and, consequently, that there should be some faculty to put him in relation with these circumstances, and make him acquainted with them. This now supposes, and absolutely requires, real functions and positive organs; so that fear is not a negative quality, even in the cases where Gall has more particularly designated it as such. If it requires the activity of faculties that preside over self-preservation; if it ceases, and its manifestation becomes impossible without the existence of these faculties; then it must, of necessity, depend upon them. On the contrary, if it may be equally manifested with or without courage, as is admitted, it does not depend on them, either positively or negatively. Courage and fear are two opposite impulses, or principles of conduct; that is, they are based on different views or judgments, but one is as positive as the other. This passage, therefore, proves just the

contrary of what the author wished to prove. He cannot pretend, that well-developed courage would silence the faculties that preside over self-preservation; for he declares himself, that this active state of a single organ is all folly, and it would be an absurdity *in adjecto* to suppose courage to be blind, and to result from the exercise of a single faculty. Rage or phrenzy only can be considered in this light; for, rashness itself supposes the exercise of many faculties.’”

In my work I made use of the following expression; “When we say, that a man or brute feels fear, we do not necessarily mean, that at this very moment, he is agitated with fear, as people are affected with anger or fright.” Instead of this, he has quoted me as saying, “*that at this very moment he is agitated with fright or anger.*” I would like to attribute this mutilation to the inadvertence of the printer; but, when Demangeon skips over forty-one lines, and places immediately after this passage, a sentence from an entirely different paragraph, in which it is my object to prove, that the most courageous men and animals do not, on that account, lose the power of measuring their own strength with that of their enemies; that armies composed of men renowned for their courage, have been seized with a panic, &c., is the printer here chargeable with bringing together two sentences of opposite meaning, with the express design of justifying the author in constantly confounding cowardice with that reasonable fear, resulting from other faculties, which could never give rise to fear without the existence of an organ; a certain affection of which should constitute this sentiment?

Suppose I should reply to Demangeon, that, when a man or brute walks, or reposes, or is fatigued, or paralyzed only at certain times and in an accidental manner, certain faculties must produce in him repose, fatigue, or paralysis, and that therefore, repose, fatigue and paralysis are not negative, but must depend on particular organs, just as much as the power of voluntary

motion, would he not be charmed with the correctness of this conclusion?

Finally, Demangeon, after exhausting our courage, concludes,—“that the existence of a special and unique organ of courage is inadmissible; that the instinct of self-preservation is provided for in the brain, and that even courage, fear, circumspection, prudence, love of offspring, the desire of renown or immortality, &c., are more or less submitted to the influence of this instinct, which, being all essential to the ends of nature, could not have been forgotten by the Creator of all things, as it has been by our two physiologists, who have left a great many waste places in the domain of thought.”

On this last point, we are precisely of the opinion of Demangeon, and the more we speculate, the more vast and barren will these waste places become. As for the instinct of self-preservation, I am equally persuaded, that the Creator of all things has not forgotten it. Neither have I forgotten it. For a long while, I thought this idea extremely plausible, but, as I discovered fundamental qualities and faculties, I perceived that they were all destined to the great end of self-preservation. The existence and preservation of an animal are intimately connected, and the instincts, dispositions, talents, in one word, the qualities and faculties, are so many indispensable means of the preservation of his existence. For this reason, I have said that self-preservation supposes the instinct of self-defence. But preservation also supposes the social state, the instinct of a fixed abode, the instinct of being nourished on animals or vegetables, the instinct of cunning, the memory of facts, the instinct of emigration, the instinct of construction, &c. Demangeon himself, attributes to the conservative instinct, not only courage and fear, but also circumspection, prudence, love of offspring, the desire of renown or immortality. Reasoning in this way, all the functions of the brain and of the whole organism, might be reduced to a single function, a single end, a single instinct—the instinct of self-preservation; and in the midst of

our reasonings we should get, more than ever, lost in the abstractions and generalities of the metaphysicians,—an impassible barrier to all further research, the eternal tomb of all positive and special knowledge.

V. Carnivorous Instinct; Disposition to Murder.

History of the Discovery of this Instinct, and of its Organ.

By carefully comparing the skulls of animals, I found a characteristic difference between those of the frugivorous and those of the carnivorous species. Placing the skulls of the frugivora in a horizontal position on a table, and raising a perpendicular from the external opening of the ear, I found that there remained behind this perpendicular, only a small portion of the posterior lobes and the cerebellum; consequently, the external opening of the ear, and the petrous portion of the temporal bone, mark the limits of the cerebrum, in these species. Testing the skulls of the carnivorous species in the same manner, I saw that, in the most of them, the perpendicular strikes the middle of the whole encephalic mass, or, at least, leaves behind it a very large portion of the cerebral mass. Ordinarily, in the carnivora, the greatest prominence of the brain is exactly over the external opening of the ear.

I saw therefore that, in the carnivora, there are cerebral parts above and behind the ear, not possessed by the frugivora, and the same difference I found in birds as well as the mammifera. In all the birds of prey, this part of the brain swells out, while in all other species of birds, it seems to retreat, and the whole brain is situated in front of the external opening of the ear. For a long while I contented myself with communicating this observation to my hearers, without making the slightest practical application of it to organology. I showed them only how, by inspection of the skull, even when

the teeth were wanting, they might tell whether it belonged to a frugivorous or carnivorous animal.

The skull of a parricide was once sent me, which I put aside, without ever thinking that the skulls of murderers could be of use to me in my researches. Shortly after I received the skull of a highway robber, who, not satisfied with committing robbery, had murdered a number of persons. I placed these two skulls side by side, and examined them frequently. Every time I was thus engaged, I was struck with the fact, that, though very differently formed in other respects, there was, in each, a prominence strongly swelling out immediately over the external opening of the ear. The same prominence I found also in some other skulls in my collection. It appeared to me not merely accidental, that, in these two murderers, the same cerebral parts should be so much developed, and the same region of the skull so strongly prominent. I then began to make use of my discovery, on the different conformation of the brain and skull in the frugivorous and carnivorous animals, and for the first time understood the meaning of this difference. The brain of the latter, I said to myself, and that of the murderers, is developed in the same region. Is there any connection between this conformation, and the disposition to kill? At first, the idea was revolting, but, when the object is to observe, and to state the result of my observations I know no law but that of truth. Here too, then, let us endeavor to unveil the mysteries of nature: it is only when we have discovered the secret springs of our actions, that we can learn to guide the conduct of men.

Natural History of the Instinct of Murder in Animals.

Animals are divided into three principal classes; frugivorous, carnivorous, and omnivorous. Some, naturally frugivorous, such as the hare, horse, &c., may, in

case of necessity, feed upon flesh ; and some carnivora, such as the dog, bear, cat, &c., may be nourished on vegetables ; but this does not at all affect their real destination. It only proves that, because certain animals digest animal substances, they are not, on that account, solely, to be classed with the carnivora ; and that others which digest vegetables, cannot be considered as belonging to the frugivora. They are accustomed sometimes to feed tame ferrets on milk, but they do not therefore renounce their original instinct, and are no less ready to suck the blood of a rabbit. With no more propriety can we call certain birds, the gallinacæ for example, *insectivorous*, which commonly live on seeds, though they devour insects with avidity. I here confine myself exclusively to the carnivora, properly so called. Although they are all destined to devour other animals, there exist great differences among them relative to their murderous instinct. Many of them kill only such as are necessary for their subsistence ; while others, like the weasel, tiger, &c., without impelled by hunger, kill and tear in pieces every living creature around them. The difference between dogs in this respect, proves to demonstration, that hunger and thirst for blood are not the sole motives that determine animals to slay one another.—All dogs are carnivorous ; they prefer flesh to any other nourishment ; still there are some in which we can hardly observe the carnivorous instinct, and which, surrounded by birds, mice, and hares, manifest no wish to destroy them.

Let it not be objected, that habit and education will account for all this. I know very well that we may accustom cats to live in peace with birds, mice, &c. ; but I have had dogs, which, from their earliest youth, I tried to inspire with a taste for hunting these animals, but I never could succeed in giving them this instinct, because an inward antipathy opposed it. Other dogs, on the contrary, though fed on vegetable substances, and having even an antipathy to venison, have manifested an invincible passion for the chase, and an unbridled

rage for killing every kind of creature. With what a zest will they strangle cats, hares, foxes, &c. ! We may remark, even among real hounds, a great difference in this respect. Some bring to their master, with the utmost precaution, the partridge, quail, fox, or hare, without doing it the slightest harm ; while others always begin by finishing the work of the hunter, although frequently beaten to break them of this habit.

I have elsewhere spoken of one of my little dogs. He was reared by a very sensible lady, and it certainly was not his education that inspired him with the instinct for strangling animals. From the first hour he came into my house, he rushed upon every animal there, and strangled them, one after another. Did a bird leave its cage, he chased it till it fell on the ground exhausted with fatigue, when he killed it. A hundred times I beat him very severely, in the hope he would lose this passion, but in vain ; it terminated in his becoming the hero of the place. Though smaller than a cat, he was the terror of these creatures ; for the moment he perceived one, he laid down flat before it, and the instant the cat raised its paw, he leaped on its neck, nor let go his hold till it was dead. Several times, my friends and myself amused ourselves, with letting him run in a room where were some dozens of rats. The strongest spaniels often recoiled from their furious attack, while my little lap-dog was shaking with impatience in my arms, till I put him down, when he ran with the greatest sang froid from one to the other, and killed them by one grip in the neck. He never turned his head to look at one he had destroyed. Frequently, he would watch a rat for whole weeks, and would always succeed at last in entrapping and killing it. When he perceived a water-rat in the river, he sprang from the bridge, and never took to the shore till he had either taken, or lost sight of it. These examples prove that it is not hunger and thirst only, that impel animals to slay one another.

There are authors, who call such facts old-wives' fables, and think it ridiculous for me to support organ-

ology, by citing the qualities of a lap-dog ; but with what but facts can we support a doctrine ? and what matters it whether they relate to a shrew-mouse or to an elephant ?

The proof of the independence of this disposition is strengthened by the fact, that it reached so high a degree of activity in a creature, whose education and want of physical strength would induce us to presume a disposition precisely contrary.

External Appearance of the Organ of the Carnivorous Instinct and the seat of the organ in animals.

Naturalists are in the habit of drawing the characters that distinguish the carnivorous animals from one another, from the teeth, claws, stomach and intestines. If they may be believed, the conformation of these parts sufficiently explains the instinct that impels these animals to kill, and consequently they disdain to seek in the brain for an organ of the disposition to murder. These instruments are all in harmony with the higher internal power, but they cannot give rise to it. We may give to the sheep, the teeth and claws of the tiger, but unless we change the disposition of its brain, it will never feel the internal impulse to attack and destroy.

The tiger, in a meadow covered with grass, would perish with famine, sooner than he would think of eating it. The idiot and the maniac, with the best formed hands, would never learn to paint or build, while the necessary impulse from a higher power were withheld. When we stop confounding the executive instruments of an instinct or disposition, with the internal legislative power, we shall be forced to admit a particular organ for each particular instinct.

Before passing to the proofs, I wish to draw the attention of naturalists to a phenomenon, which they certainly cannot explain by means of the teeth, claws, stomach, and intestines of the carnivora. Each species has its

peculiar manner of killing its prey ; while some strangle their victim and tear open his throat, others seize him by the nape of the neck, &c. Who, now, has taught these animals to follow these methods of killing ? How can the teeth, claws, stomach, and intestines determine the kind of death, which is always suitable to the nature of the victim ? Our ideas on this subject will become much more precise, from the moment we admit that the external world, so far as man and other animals act upon it, is in harmony with all our senses, both internal and external ; and that the relations of the external world are revealed to all alike, by means of the cerebral organs. In this way, the actions of animals become in unison with one another, and suited to the nature of external objects ; thus the falcon and marten act as though they had some knowledge of anatomy and physiology.

I may here remark, that, in all carnivorous animals, the organ is not situated exactly over the external opening of the ear. In some species, the stork, cormorant, heron, gull, sea-swallow, king-fisher, for example, the external opening of the ear is considerably drawn back, and the organ of the carnivorous instinct is placed immediately behind the orbits, forming a large prominence on each side. In comparing the crania of carnivorous birds with the skulls of those that can live indifferently either on animals or vegetables, this prominence is found to be less conspicuous in the latter, such as the duck and the thrushes ; and it becomes less and less prominent, in proportion as the birds exhibit a more distinct preference for vegetables, such as the swan, the goose, the gros-beak, &c. It is particularly prominent in those that live exclusively on animal food, such as the spoon-bill, wren, falcon, and stork.

If we compare the crania of the mammifera, such as the bull, horse, ass, ram, buck, elephant, camel, hare, rabbit, guinea-pig, kangaroo, beaver, marmot, with those of the lion, tiger, hyena, lynx, wolf, bear, seal, rat, mole, ermine, weasel, pole-cat, ferret, marten, shrew-mouse, bat, &c. we shall invariably find the difference I have

indicated. This difference is more marked in different species and individuals, the more the carnivorous instinct predominates. The cerebral part above indicated is sensibly larger in the eagle and falcon, than in the crow and magpie; larger in the tomtit, particularly the largest species,* than in most birds that live on insects; larger in the wren† than in the mocking-bird; larger in the wolf than in the dog; larger in the lion than in the tiger.

At Vienna we always had two species of bears, the brown and the black. The former could be made to fight with every kind of animal; while we had to be satisfied with setting the dogs on the other, which lives almost entirely on roots and fruits. The same species may be seen in the royal garden in Paris. The head of the carnivorous brown bear is much broader and more swelled out over the ears than the other's, which is narrower and shorter.‡

I possess quite a collection of the heads of cats and dogs, in forming which, I always attended to the degree of the murderous instinct that each individual manifested. All good mousers, especially those that always give chase to rats and birds, have this region of the brain and cranium much more developed than those that live in kitchens and parlors. It is necessary to compare a great number of crania of animals of the same species, to be convinced, that the diversity of their form explains the difference of their characters. The intuitive knowledge thus obtained, also produces the most complete conviction of the omnipotence of innate dispositions.

* It is well known that tomtits, especially the large species, devour one another.

† When we put a wren into an aviary with other birds, it drags the young of the others from their nests, and kills them.

‡ In Poland, they call the brown bear, *pferdeboer*, (horse bear,) because he attacks horses in preference to other animals. The black bear, in Norway, is called *grass boer*, (grass-eating bear,) because he lives on grass and the leaves of trees: at the approach of winter they get fat by eating nuts.

All dogs, also, which are fond of pursuing and killing mice, rats, birds, hares, hens, foxes, have this region of the brain and skull much more prominent, than those that have no taste, or rather have a distaste, for such things. Let all who are not yet perfectly convinced of the truth of my positions, make a collection of dogs' heads, always carefully informing themselves of the disposition of each individual. They will scarcely have collected a dozen, when they will be so far converted, as to become the most zealous defenders of organology. This diversity of forms is not confined to those little variations, that may leave room to doubt; they are, on the contrary, very striking.

The comparison of the black rat,* (*mus rattus. Lin.*) the brown, or Norway rat, (*surmulot, Buff. mus decumanus, Pallas.*) the hedgehog, the hamster, (*mus cricetus, Lin.*) the ermine, and the weasel, (*mustela vulgaris,*) with one another, is very instructive. The black rat and the hedgehog do not live exclusively on vegetable food, but devour small animals also. The brown rat is far more carnivorous and sanguinary. The hamster devours all small animals it meets with, even its own female, which also devours its own young. A dog must be perfectly trained, to attack successfully the brown rat and the hamster, while the ermine and weasel always come off best in the encounter. The head of the brown rat in the region in question, is much broader and more prominent than the black rat's; the hamster's is more so than the brown rat's; and the ermine and weasel, which are exclusively carnivorous,

* I do not here mean the same to which the name *mus rattus* is ordinarily given by authors, who confound the black rat with the one found in granaries. The former never climbs trees, nor frequents granaries, and is smaller than the brown rat. Its pelage is of the same color as the brown rat's, and its tail is scaly, like that of the latter, and as long in proportion to the body. The granary rat, in German *Speicherratze, blaue Ratze*, has longer hair, which is of an ash-gray color; the tail is equally smooth, but half an inch or an inch longer than that of the two other species.

have the organ of the carnivorous instinct still more developed. Thus the cerebral organization explains why the brown rat and the hamster are eminently sanguinary, though naturalists, guided by the teeth, have classed them with the gnawers, (*rodentia*,) and, consequently, with the frugivora.

Thus then the whole animal kingdom concurs to prove, that the carnivorous instinct does not depend on the teeth, nor on the claws, nor intestines, but results from a particular cerebral organ, and that this organ is situated in the region of the brain which I have pointed out; that is, in the most external convolutions of the middle lobes in the mammifera; and which is manifested outwardly by a large round prominence, placed, in most animals, directly above the ears, and in others, a little before them.

Objection.

"If Gall and Spurzheim," says Demangeon, "would be consistent, after admitting a carnivorous instinct, why should they not also admit a frugivorous, ichthyophagous, and galactophagous instinct, because the only result of the absence of the organ, is to prevent them from eating animal food, without, at the same time, giving them an elective instinct for vegetables, fish, milk, insects, &c. ? If nature had not been more liberal than they, the non-carnivorous animals would have perished with hunger. There must be some organ yet, at the bottom of the bag, for putting the herbivorous and other animals in relation with their food, or else there is no reason for admitting one in favor of the carnivora. The conclusion appears to me strictly correct. Besides, the carnivorous instinct, to which our authors refer murder and cruelty, should also be an attribute of the non-carnivorous animals, which implies a contradiction. Or else they must explain, by the instinct of quarreling, or some other not mentioned by them, why the elephant

and rhinoceros engage in deadly combats; why the stag sometimes kills its female and young; why the working-bee kills the drone; and why man himself is far more cruel than brutes, without being actuated even by the want of nourishment, or by the instinct of quarreling or fighting; as appears in the gratuitous cruelty of a cowardly, pusillanimous tyrant; the cruelty towards defenceless animals and children, as well as that manifested in the shows of gladiators, bull-fights, &c. If all this can be explained by the organ of quarreling and fighting, then the instinct of murder is supererogatory, and an organological superfetation."

Reply.

If Demangeon had attended to the list of animals I mentioned, and which I have also drawn, he would have found some that eat fish; others, that eat milk; and others, insects; and he would have concluded, that the organ of the carnivorous instinct, accordingly as it is differently modified, assigns to each species its appropriate nourishment. In the spirit of Demangeon, we ought to admit as many organs of singing and construction, as there are different kinds of songs and of bird-nests; as many different instruments of locomotion, as there are different kinds of walking and flying. Since I find the same organization essentially in all animals, whether feeding on fish, insects, or oysters, &c., the fact arrests my attention, and I explain the variations of the result by the modifications of the organ. I am ready to admit a frugivorous organ, as soon as the cerebral parts belonging to it can be indicated; or whenever the instinct for animal food can be demonstrated to be nothing more than a modification or increase of the general alimentive instinct, obtained by means of a cerebral part, added by nature to that which alone would produce the frugivorous instinct.

In the rest of the passage quoted, Demangeon con-

founds the result of the instinct of quarreling with that which requires animal nourishment. As for the instinct of bees for killing the drones, I willingly resign to Demangeon the task of explaining this phenomenon, which, although still problematical, can never destroy a general and invariable truth.

Natural History of the Carnivorous Instinct in Man.

The first question presented to our notice is, whether man is naturally carnivorous, or is destined by nature to be exclusively frugivorous, using animal food, only in consequence of degenerating from his primitive destination.

Man is omnivorous. Flesh nourishes him full as well as vegetables. In the structure of his teeth, jaws, stomach, and intestines, he holds a medium between the frugivora and carnivora ; relishing all animals, from the oyster to the pheasant, and all vegetables from the potato to the pine-apple. If the Creator had designed him to be nourished by vegetables only, nothing certainly could have turned him from his destiny. If, in certain climates, he is more exclusively carnivorous or frugivorous, it depends on the influence exerted upon him by surrounding objects and circumstances,—one kind of climate favoring the development of one organ, and repressing that of another, and vice versâ. Since then man was designed to feed on flesh, it is necessary, that, like the other carnivora, he should be induced, by an internal impulse, to kill other animals, and the history of all times shows that he is really endowed with this quality. It only remains for me, therefore, to show how differently this instinct is manifested in different individuals, and the part it sometimes bears in insanity and idiocy, in order to prove, that, in man, and other animals, it is an independent and peculiar function, and must consequently result from a particular organ.

In the fifth section of the first volume, I have describ-

ed the different degrees of the manifestation of this disposition. To save the reader the trouble of recurring to that volume, and to present the whole subject at once, I will repeat the passages relative to the carnivorous instinct, or disposition, to murder.

There is in man, an inclination, which varies in degree, from simple indifference at seeing animals suffer, and from simple pleasure at witnessing the destruction of life, to the most imperious desire of killing. Our sensibility revolts at this doctrine, but it is, nevertheless, only too true. Whoever would judge justly of the phenomena of nature, must have the courage to acknowledge things as they are, and, in general, not to make man better than he is.*

We observe that, among children as among adults, among coarse people as well as those who have received education, some are sensitive, and others indifferent to the sufferings of their fellows. Some even find pleasure in tormenting animals, in seeing them tortured, and in killing them, without our being able to charge it either to habit, or to a defect of education. I could cite several instances, in which this inclination, when very energetic, has decided individuals in their choice of employment. A student used to shock his companions by the particular pleasure he took in tormenting insects, birds, and other animals. It was to satisfy this propensity, as he himself said, that he made himself a surgeon. An apothecary's boy experienced such a violent propensity to kill, that he took up the trade of a hangman. The son of a shopkeeper, whose mind took the same turn, embraced that of a butcher. A rich Dutchman used to pay the butchers, who made large contracts for supplying vessels with beef, to let him kill the cattle.

We may also judge of the existence of this propensity and of its diversity, by the impression produced on spectators by the punishment to which criminals are subject-

* Vol. 1. p. 259.

ed. Some cannot support the spectacle ; others seek it as an amusement. The Chevalier Selwyn made particular exertions to be placed near the criminal who was undergoing punishment. They relate an anecdote of La Condamine, that, one day, making efforts to penetrate the crowd assembled at the place of execution, and being repulsed by the soldiers, the executioner exclaimed, "Let the gentleman pass, he is an amateur." M. Bruggmans, professor at Leyden, mentioned to us a Dutch clergyman, who had so decided a desire for killing, and for witnessing death, that he took the place of almoner of a regiment, solely to have an opportunity of seeing a great number of men destroyed. This same individual raised at his house, the females of various domestic animals, and when they brought forth young, his favorite occupation was to cut their throats. He used to take charge of killing all the animals that were to be cooked. He corresponded with the executioners throughout the country, and would travel several miles on foot, to be present at executions ; so that the executioners always secured to him the distinction of a place near them. On the field of battle we find striking examples of the different degree in which this disposition exists. One soldier, at the view of the blood which he causes to flow, feels the intoxication of carnage ; another, moved by pity, inflicts feeble blows, or at least spares the conquered ; turns away at the sight of a child, of a woman, and of an old man, and checks himself after a victory.

The man enslaved by the cruel propensity of which I here speak, still preserves the faculty of vanquishing it, or of giving it a direction which is not injurious. But the power of subduing a vicious propensity, is weakened in such an individual, in proportion as he has received less education, or the organs of the qualities of a superior order are less developed. If it happens that this propensity is carried to the highest degree, the man experiences but little opposition between his pernicious propensities and his external duties ; and though even in this case

he is not deprived of moral liberty, or the faculty of being determined by motives, he still finds pleasure in homicide. I shall include in this case all the robbers, who, not content with plunder, have shown the sanguinary inclination to torment and kill without necessity. John Rosbeck was not satisfied, like his companions, with ill-treating his victims to make them confess the place where their treasures were concealed; he invented and exercised the most atrocious cruelties, for the sole pleasure of seeing the sufferings and the blood of children, women, and old men. His first imprisonment continued nineteen months; he was shut up in a subterranean dungeon, so narrow that he could hardly breathe. His feet were loaded with chains; he was up to the ankles in dirty water; and when he was taken from this sink, it was to undergo cruel torture. Still he would confess nothing; he was set at liberty, and the first use he made of his freedom, was to commit a robbery in open day. He soon committed new murders, and was finally put to death. At the beginning of the last century, several murders were committed in Holland, on the frontiers of the country of Cleves. The author of these crimes was a long time unknown. Finally, an old minstrel, who used to go to play the violin at all the weddings in the neighborhood, was suspected from some conversation among his children. Carried before the magistrate, he confessed thirty-four distinct murders, and asserted that he had committed them without malice, and without any intention to rob, solely because he found in them extraordinary pleasure. This fact was communicated to us by M. Serrurier, magistrate at Amsterdam.

The well-known Sabatino, condemned at Palermo, for various crimes, at the moment he ascended the scaffold, confessed that he had killed a man with a musket shot two years before. When asked what could have induced him to commit such an outrage, he coolly replied, that he had fired his musket on the man, to satisfy

himself that the powder was good ! *Journal des Maires*, Saturday, Sep. 19, 1818.

Louis XV., says M. Lacratelle,* had a well-founded aversion to the brother of the duke de Bourbon Condé, the Count de Charolais, a prince who would have revived all the crimes of Nero, if, to the misfortune of mankind, he had been permitted to occupy a throne. Even in the sports of his childhood, he manifested an instinct of cruelty which might make one shudder. He amused himself in torturing animals: his violence to his servants was absolutely ferocious. They pretend that he tried to mingle cruelty even with his debaucheries, and that he practised divers barbarities on the very courtezans who were brought to him. The popular tradition, confirmed by several records, accuses him of several homicides. He committed murder, as is said, without interest, resentment, or anger. He used to fire at bricklayers, in order to enjoy the barbarous pleasure of seeing them fall from the top of the houses, on which they worked.

These last facts, fortunately very rare, show us that this detestable propensity is sometimes altogether independent of education, of examples of seduction or habit, and that it has its source solely in a bad organization. In fact, there are sometimes committed crimes so barbarous, with circumstances so revolting and disgusting, that it would be difficult to explain them in any other manner. Prochaska† relates that a woman of Milan used to lure children to her house by flatteries, kill them, salt their flesh, and devour them daily. He also cites the example of a man, who, in the indulgence of this atrocious propensity, killed a traveller and a young girl, to devour them. I have already mentioned the daughter of a cannibal, who, though educated at a distance from him, partook, from an early age, of this savage passion.

* *Historie de France*, tom. ii. p. 59.

† *Opera Minora*. tom. II. p. 98.

We cannot deny, then, that certain individuals have propensities to crimes, and even to those of the most atrocious character. Helvetius himself, the great antagonist of the innateness of the qualities of the mind and soul, is obliged to allow "that there are men so unfortunately constituted, as never to be happy, but in doing deeds which will send them to the gallows." Cardinal Polignac,* also speaks of men "born vicious, for whom crime has actual charms, and who are borne along by a furious passion, which obstacles only irritate."†

Professor Bruggmans, of Leyden, showed the skull of a leader of Dutch robbers, who had precipitated several persons into canals, for the sole gratification of seeing them struggle with death. "What can they do with me," he said on his trial; "am I not an honest man?" Schinderhannes and his accomplice took the greatest pleasure in telling the story of their crimes, and their eyes would sparkle during the recital. Every circumstance calculated to heighten the effect, was dwelt upon with the most intense delight. There have been some, who, at the very moment of their execution, when calling up to their recollection the pleasures in which they had reveled during life, have boasted that none have equaled those produced by the exercise of cruelty.

If any of my readers deem this portrait of man too deeply shaded, let them retrace the whole history of ancient and modern nations. Is there a single spot on the globe, that has not been reddened with human blood? Let them read the history of God's chosen people; the history of the Romans; the discovery of America; — let them follow the Spaniards to Cuba, to Mexico and Peru; — let them open the history of Inquisitions, and of the religious wars; — let them call to mind the Sicilian Vespers, St. Bartholemew's day, and the French revolution. Every where we tread on bat-

* De l'Esprit, p. 578.

† Anti Lucrece, trad. par. M. de Bougainville, Louis, 1754, p. 184.

tle-fields ; every where we encounter funeral piles, wheels, and a thousand instruments of torture invented to abridge man's life. What an immense diversity of machines of destruction and death fill our arsenals ! In fine, is not military glory ever placed above all others ?

If you would see, in all his nakedness, the man whose bosom harbors the most atrocious passions, observe him when the very multitude of his crimes renders every sort of disguise superfluous. Look at him who hires the midnight assassin, or at the assassin himself, who barter his stabs for gold, and makes a business of destroying his neighbor's life ; at the poisoner, and at those robber chiefs, surrounded by the most ferocious wretches, whom they lead to rapine and murder. Especially observe those miscreants, born with the thirst of blood, when seated on the throne, where no law can reach them, and no considerations whatever check their unbridled fury. Behold Caligula, cutting out the tongues of innocent people, throwing them to wild beasts to be devoured, forcing parents to assist in the execution of their children, giving the unfortunate wretches their choice of the wheel or the rack, and amusing himself with their agony, summing up his rage in one wish, that the Romans had but one neck, that he might decapitate them at a single stroke, feeding wild-beasts, kept for the shows, on living men, and whose strongest wishes were for famine, pestilence, conflagration, earthquake, and the loss of an army. Look at Nero, poisoning Britannicus, murdering his mother, and the husband of the woman he wished to violate ; passing the night in the streets, with a rabble of unbridled youths, fighting, robbing and killing ; sacrificing to his fury his own wife Octavia, Burrhus, Seneca, Lucan, Petronius, and his mistress Poppæa ; setting fire to the four corners of Rome, and then ascending an elevated tower, to enjoy the terrible sight at his ease, with the wish that he could see the whole world on fire ; covering the Christians with wax and other combustibles, and burning them by night, that they might serve for lamps ; laying a plan to murder all the gover-

nors of provinces, all the generals of the army, all the exiles and all the Gauls in Rome ; to poison the whole senate at their meal, to burn Rome a second time, and, at the same moment, turn the wild beasts reserved for the shows, into the streets, to prevent the people from extinguishing the fire. Behold a Louis XI., the ungrateful, unnatural and rebellious son, whose father died from very fear of being killed by his own son ; who, formed by nature for a cruel and implacable tyrant, wished to reign only by terror ; and looked on France as a meadow, that he might mow every year, and as close as he pleased. Few tyrants have slain more citizens by the hands of the executioner, and the most refined methods of destruction. The chronicles of the time reckon four thousand subjects, executed publicly or privately, in his reign. Dungeons, iron cages, and chains, that loaded the victims of his barbarity, are the monuments he left behind him. While criminals were put to the torture, he stationed himself behind a lattice, &c. &c. Nothing but gibbets were to be seen around his palace, and he personally assisted in the execution of his vengeance. When the Duke of Nemours was executed for high treason, he caused the children of this unfortunate prince to be placed upon the scaffold, that they might be sprinkled with the blood of their father. They descended covered with his blood, and in this state were conducted to Rochelle, and put into scuttle-shaped dungeons, where the cramped condition of their bodies operated as a perpetual torture. Forever covered with relics and images, and wearing a leaden figure of Our Lady in his bonnet, he asked pardon for his murders, and then proceeded to commit new ones. Look at Sylla, Tiberius, Domitian, Marcus Caius, Aurelian, Caracalla, Septimius Severus, Henry VIII., Catherine de Medicis.

It would take years to enumerate the scenes of horror, which the earth has exhibited ; and those, who would know the hearts of ordinary men, must transport themselves into times when there existed no restraint on the

passions. Who is ignorant of the horrible scenes that have stigmatized the French revolution? Who has not heard the names of Rossignol, of Pethion, of Marat, of Chalier, of Robespierre, of Danton, of Carrier, of Henriot, of Collot d'Herbois, of Fouquier, Tinville, &c.? Think of the murders, that are every day committed with all the refinements of cruelty, in spite of education, morality, religion, and the laws. When, too, will the barbarous and infamous custom of duelling cease to be authorized? Who, now, will dare to maintain, that there is not in man an innate propensity, which leads him to the destruction of his own species? Where is the creature, that evinces more ferocity towards all other animals, not excepting his fellows, than man? *

Disposition to Murder, joined with Mental Imbecility.

To show, further, that this disposition may act, independently of other qualities or faculties, I present the following examples, where it was manifested, notwithstanding an extreme feebleness of all the other faculties and qualities. An idiot, after killing his brother's two children, went and told him of it, as something to laugh about. Another, who had murdered his brother, was desirous of burning the body with parade and ceremony. A third, after killing a hog, thought he could murder a man, and he actually did. A fourth, without the slightest motive, killed a child.† The dreadful cases of this kind, that so frequently happen, shows the necessity of imposing the strictest surveillance on idiots that have manifested mischievous propensities.

* In vol. I. sect. iv. I have shown, that the existence of a propensity does not necessarily suppose its action, nor exclude moral liberty.

† Vol. I. p. 277.

Disposition to Murder in Insanity.

At Berlin, M. Mayer, surgeon of a regiment, showed us, in presence of M. M. Heim, Finney, Hufeland, Goericke, and others, a soldier in whom sorrow for the loss of a wife whom he tenderly loved, had greatly enfeebled the physical powers, and induced excessive irritability. At length, he had every month an attack of violent convulsions. He was sensible of their approach, and as he felt, by degrees, a violent propensity to kill, in proportion as the paroxysm was on the point of commencing, he was earnest in his entreaties to be loaded with chains. At the end of some days, the paroxysm and the fatal propensity diminished, and he himself fixed the period at which they might set him at liberty without danger. At Haina, we saw a man, who, at certain periods, felt an irresistible desire to injure others. He knew this unhappy propensity, and had himself kept in chains till he perceived that it was safe to liberate him. An individual, of melancholic temperament, was present at the execution of a criminal. The sight caused him such violent emotion, that he at once felt himself seized with an irresistible desire to kill, while at the same time he entertained the utmost horror at the commission of the crime. He depicted his deplorable state, weeping bitterly, and in extreme perplexity. He beat his head, wrung his hands, remonstrated with himself, begged his friends to save themselves, and thanked them for the resistance they made to him. M. Pinel has also observed, that in furious madmen there is often no disorder of the mental faculties. Hence he likewise declares himself against the definition which Locke has given of mental alienation. He speaks of an individual, whose mania was periodical, and whose paroxysms were regularly renewed after an interval of several months. "Their attack was announced," says he, "by the sense of a burning heat in the interior of the abdomen, then in the

chest, and finally in the face; then redness of the cheeks, an inflamed aspect, a strong distension of the veins and arteries of the head; then fury, which led him, with irresistible propensity, to seize some weapon, and kill the first person who came in his way; while, as he said, he constantly experienced an internal contest between the ferocious impulse of his destructive instinct and the deep horror inspired by the fear of crime.—There was no evidence of wildness in the memory, imagination, or judgment. He avowed to me, during his close confinement, that his propensity to commit murder was absolutely forced and involuntary; that his wife, notwithstanding his affection for her, had been on the point of becoming its victim, and that he had only had time to warn her to take to flight. All his lucid intervals brought back the same melancholy reflections, the same expression of remorse; and he had conceived such a disgust for life, that he had several times sought, by a final act, to terminate its cause. “What reason,” said he, “should I have to murder the superintendent of the hospital, who treats us with so much humanity? Yet, in my moments of fury, I think only of rushing on him, as well as the rest, and burying my dagger in his bosom. It is this unhappy and irresistible propensity which reduces me to despair, and which has made me attempt the destruction of my own life.”* Another madman experienced paroxysms of rage, which were periodically renewed for six months of the year. The patient himself felt the decline of the symptoms toward the end of the paroxysms, and the precise period when they could without danger restore him his liberty in the interior of the hospital. He himself requested to have his deliverance deferred, if he felt that he could not yet govern the blind impulse which led him to acts of the greatest violence. He confessed, in his calm intervals, that, while the paroxysm continued, it was impossible for him to

* L. c. p. 102.

repress his fury ; that then, if any one appeared before him, he imagined that he saw the blood flowing from that man's veins, and experienced an irresistible desire to taste it, and to tear his limbs with his teeth, to render the suction easier.*

The truth of the following very extraordinary case of madness, is warranted by the Mercury of Swabia. "A carrier, belonging to the bailiwick of Frendenstadt, who had quitted his family in perfect health, was suddenly attacked by a paroxysm of furious madness, on the route between Aalen and Gemunde. His first insane act was to shut himself up in the stable with his three horses, to which he gave no fodder ; and when departing he harnessed only two of his horses, accompanying the carriage, mounted on the other. At Moglengen he abused a woman ; at Unterbobingen, he alighted, and walked before his horses with a hatchet in his hand. On the route between this last place and Hussenhofen, the first person he met with, was a woman whom he struck several times with his hatchet, and, left her lying in a ditch by the road-side. Next, he encountered a lad thirteen years old, whose head he split open ; and, shortly after, he split the skull of a man, thirty years old, and scattered his brains in the road, and after hacking the body, he left his hatchet and carriage, and thus unarmed, proceeded towards Hussenhofen. He met two Jews on the road, whom he attacked, but who, after a short struggle, escaped him. Near Hussenhofen, he assaulted a peasant, who screamed till several persons came to his aid, who secured the maniac, and carried him to Gemunde. They afterwards led him to the bodies of those he had slain, when he observed, 'It is not I, but my bad spirit, (*mauvais esprit*,) that has committed these murders.' "†

For the following narrative, I am indebted to the po-

* L. c. p. 283.

† *Aristarque Francois* of Thursday, 13 April, 1820.

liteness of Dr. Zimmermann, of Krumbach. "A peasant, born in Krumbach, Swabia, of parents who never enjoyed very good health, twenty-seven years old, and a bachelor, had been subject from his ninth year, to frequent epileptic fits. Two years ago, his complaint changed its character, without any assignable cause, and ever since, this man, instead of having the epileptic fits, has been attacked with an irresistible inclination to commit murder. He felt the approach of the fit many hours, and sometimes a whole day, before its invasion, and at its first coming on, he begged to be secured and chained, that he might not commit some dreadful crime. 'When the fit comes on,' says he, 'I feel under a necessity to kill, even if it were merely a child.' His parents, whom he tenderly loved, would be the first victims of his murderous propensity. 'My mother,' he would cry with frightful voice, 'save yourself, or I must kill you.' Before the fit, he complains of being exceedingly sleepy, without being able to sleep; he feels depressed, and experiences slight twitchings of the limbs. During the fit, he preserves his consciousness, and knows perfectly well that, in committing murder, he is guilty of an atrocious crime. When he is disabled from doing injury, he makes the most frightful contortions and grimaces, singing or talking in rhyme. The fit lasts from one to two days. When it is over, he cries out, 'Now, unbind me. Alas! I have cruelly suffered, but I rejoice that I have killed nobody.'"

A pregnant woman was seized with an irresistible inclination to kill her husband and eat him. She did so, and even salted the body, that she might feed upon it for many months.

M. Fodéré, also, quotes examples of the great activity of the disposition to murder in insanity, and, among others, of a young man, twenty-five years old, who had often raised his parricidal hands against his respectable father, and who, on this account, was put into an insane hospital. He was always neat in his person, and appeared quite intelligent, "which induced me," says Fodéré, "to try

to excite in him some feelings of remorse, but he would never admit the enormity of his crime, and he would frequently look at me, as if measuring the chances of a successful attack ; his manners, all the time, however, being extremely polite."

Never has this propensity a more atrocious character, than when accompanied by visions. Pinel cites the case of a monk, alienated by devotion, who thought he had one night seen the Virgin Mary surrounded by a choir of angels and happy spirits, and received an express order to kill a certain person, whom he considered as an infidel ; he would have executed this commission, had not his actions and manner betrayed him. The same author speaks of a credulous vine-dresser, who was so violently shaken by the sermon of a missionary, that he thought himself and his family damned to everlasting pains, if he did not save them by the baptism of blood, or martyrdom. He therefore first endeavored to murder his wife, who escaped with difficulty ; he then killed two of his children, to procure them eternal life ; and, when confined to prison before trial, he cut the throat of a criminal in the same room with him ; still with the intention of doing some expiatory act. His insanity being proved, he was ordered to be shut up in the Bicêtre for life. Long solitary confinement exalted his imagination, and because he had not been executed, he fancied himself the Almighty ; or, according to his own expression, the fourth person of the Trinity, sent to save the world by the baptism of blood. Having been confined for ten years, he became tranquil, and was permitted to converse with the other convalescents in the court of the hospital. He passed four years in this way, and his health seemed restored ; but he was again suddenly seized with his former superstitious and sanguinary ideas. The day before Christmas, he conceived the project of offering up an expiatory sacrifice, by killing all who might fall under his hands ; he consequently got possession of a shoemaker's knife, with which he gave the keeper a thrust from be-

hind, which fortunately slipped over the ribs ; he then cut the throats of two other lunatics, and would have continued his homicides, had he not been overpowered and prevented.

It is not improbable that some such cause had a share in the assassination of Henry IV. Ravallac belonged to the order of the FEULLANS, but his notions, *visions*, and extravagances drove him from the cloister. Indicted but not convicted of murder, he escaped punishment. Some fanatical preachers were then teaching, that it was permitted to kill those who endangered the Catholic religion. Ravallac, whose character was naturally of a sombre, bilious cast, eagerly embraced these abominable principles, and resolved to assassinate Henry IV., whom his heated imagination represented as a protector of heresy, and about to make war with the Pope. He left Angouleme six months before the crime, with the intention, he said, of speaking with the king and not killing him, unless he failed of converting him. He presented himself at the Louvre several times, when the king was to pass out, was always repulsed, and finally went back. For some time he was less afflicted by the visions that disturbed him, but near Paques, he was tempted more strongly than ever to execute his design. He came to Paris, stole from a shop a knife, that appeared suitable for his execrable project, and again went back. When near Etampes, he broke off the point of his knife between two stones, in a fit of repentance, and almost immediately re-sharpened it, returned to Paris, and followed the king for two days ; finally, his purpose constantly gaining strength, he accomplished it, 14th May, 1610.

What, in such cases, is the cause of temptation ? It is a state of disease and extreme irritation, or, at least, an excessive and fatal activity, of the organ of murder. Examples of this kind are so frequent, that I can hardly conceive, how jurists and legislators should have continued, to the present moment, to be so little acquainted with this subject. This is why I considered it a matter

of duty, to treat it so particularly in the third section of the first volume; and so much importance do I attach to it, that I cannot refrain from requesting my readers to re-peruse that section. Every day, I see treated, as atrocious crimes, actions which, in fact, are only very unfortunate events, resulting from mental alienation. Let me here repeat some cases that I have related in the above-mentioned passage.

I know a woman, twenty-six years of age, now well, who was attacked with the same disease: she has had successively all the symptoms of this disease: she experienced, especially at the times of the periodical evacuations, inexpressible torture, and the fearful temptation to destroy herself, and to kill her husband and children, who were exceedingly dear to her. She shuddered with fear, as she pictured the combat which took place within her, between her duty, her principles of religion, and the impulse which urged her to this atrocious act. For a long time she dared not bathe the youngest of her children, because an internal voice constantly said to her, "Let him slip, let him slip." Frequently, she had hardly the strength and the time necessary to throw away a knife, which she was tempted to plunge in her own bosom, and that of her children. Did she enter the chamber of her children or husband, and find them asleep? the desire of killing them at once assailed her. Sometimes she shut precipitately after her, the door of their chamber, and threw away the key, to remove the possibility of returning to them during the night, if she happened not to be able to resist this infernal temptation.

Those of my readers to whom a thorough examination of so important a subject, will not appear tedious, will permit me here to insert entire the account of a tragical event, relative to the subject under discussion. This account will not only furnish me with an opportunity of making many remarks, but it will be useful to physicians and jurists, as a guide and a standard for judging of the different degrees of alienation. The editors of the *Patriotic Journal of the Austrian Empire*,

have taken it from the fourth volume of the Annual Register of legislation and jurisprudence for the Austrian states, published by M. F. de Zeiller, aulic counsellor.

*Criminal case of H**, who assassinated two persons.*

On the 2d December, 1807, a woman, aged fifty, and her daughter-in-law, aged twenty-four, were fatally wounded at Trieste, in the pit of the theatre, during the performance of the play. The author of the deed came forward, exclaiming, "There are those who have murdered me," and remaining still, he quietly suffered himself to be arrested. The eldest woman received but one wound, but, in the opinion of medical men, it was mortal, and, in fact, it occasioned her death a few minutes after. On the other were discovered five wounds, one of which was dangerous, and another, mortal. She died at 3 o'clock next morning.

The murderer, whose name was H**, born at Trieste, aged twenty-seven, and a bachelor, was a ship-broker. In the summary examination, which he underwent immediately after his arrest, he answered to the first question, "that he was arrested for having cut off two women who had assassinated him." The officer, in arresting him, took away from him a manuscript very carefully prepared, in which the motives of his crime were detailed at length. He begged the officer to read it, loudly attested its truth, and even signed it. The facts gathered from his answers to the ulterior questions addressed to him by the court, were as follows. He had finished the manuscript the evening before. Having then experienced more severely than ever, the pains produced by his miserable destiny, of which the persecutions of the two women were the principal, he formed the plan of killing them. As he could not execute his design in the street, nor in their house, he went the next day to the theatre, but not seeing them where they were accustomed to sit, he waited for them outside the house.

When they arrived, he re-entered the theatre, gave them time to sit down, and opened the door of their box, and effected his purpose. "I never intended," he added, "to withdraw from the arms of justice, notwithstanding the ease with which I might fly by sea or land into Italy. God be merciful! I submit to whatever the court shall order." The circumstances of the assassination were confirmed the same evening by the young woman, who was mortally wounded, and by a person who was in the box at the time, and who, when the first blow was given, went out to call assistance.

The manuscript prepared by the murderer occupied four leaves, and was written in Italian. The ideas are connected, and the style flowing. It is entitled, "*Summary exposition of my life for the last eight years.*" We proceed to give an extract, omitting the frequent repetitions, and such circumstances as throw no light on the facts or the character of the author.

The frightful and almost unexampled position of the author, says the manuscript, originated with the elder of the two women, whom he killed. He has lived opposite to her for the last twelve years, and she has made him wretched by diabolical artifices of astrology. It is about eight years, since he inferred from the manner of Theresa, the daughter of the merchant with whom he often met her at the theatre and elsewhere, that she was deeply in love with him. He was unable to reciprocate her affection, because the impious woman, of whom he is going to speak, had deprived him of his reason, and hardened his heart. He sought to gain admission to the merchant's house, but was politely refused. To divert his thoughts from this subject, he left home in 1799, and went to Venice, Leghorn, and Florence. At the end of a year, he returned, but remained for a short time only, and then made a second tour into the provinces near Italy, in spite of all that was done, according to his own account, to prevent his departure by the father of Theresa, who bribed the inn-holders and shopkeepers, to make him acquainted with his daughter's

love for him. This merchant even tried to make him return, while he was on his way. Want of money was a source of some severe troubles to him, during this excursion. He once, for sixty hours, had nothing but a glass of water and a morsel of biscuit, and often passed the night in the open air. His body was extremely enfeebled. Two months after his departure, he returned, and, for four months, his parents, with considerable difficulty, supplied his wants. He was offered the place of clerk of a ship, whereby he made a voyage into different provinces of Italy, to France, Spain, Holland and Hamburgh. During this voyage, which lasted a year, he was exposed to storms, shipwrecks, pirates, and to every kind of danger. Finally, he was in partnership with a ship-broker in Trieste for three months and a half, and made considerable money, which, by his own confession, he spent in high living and all kinds of excess. He again tried short trips on foot, in order that he might live quietly, but he found no rest. "Thus," he cried, "have I lived for the last eight years, wretched and idle, while I should have been the father of a family, and obtained general esteem."

"But the almost incredible physical sufferings I endured in my travels, were nothing, compared to the frightful visions brought on me by astrological artifices, that have tormented me day and night ever since Nov. 16, 1805. Frequently I have dispersed them with the crucifix." The elder of the two women would appear to him sometimes, to advise him in a friendly manner not to struggle with his passions, and sometimes to overwhelm him with the painful recollection of the sufferings he experienced during his travels. At another time, she loaded him with reproaches for corresponding with other women. The young woman would appear to him in the most voluptuous attitudes, which inflamed his imagination to the highest degree, and produced the usual consequences of such visions, too often fatal to the health of young men.

This young woman inspired him with an inordinate

passion, and he sought every opportunity to see her at the window, in the street, or at the public shows, by placing himself near her seat. He has frequently heard the elder woman converse about him. She exclaimed one day, for instance, "I will not fear the devil." He was become the slave of these women; they knew all his thoughts and every one of his acquaintances. They had so persecuted him by their apparitions, or their emanations, that he had lost considerable blood, and his strength was much exhausted. He said, in concluding, "it is a most black and terrible crime, and deserves, in heaven and on earth, the severest vengeance."

On addressing him some questions, relative to certain obscure passages in his memoir, and to what he had done since it was written, he replied, that, by astrological artifices, he meant the sorceries of the women who made him suffer like a martyr. In saying that the two women had murdered him, he meant that they had deprived him of rest, and that the younger had inspired him with a violent passion, which abated a little during his travels, but gained fresh strength on his return, and had entirely broken his constitution. The conclusion of the manuscript had relation to the vengeance he wished to execute on the two women, who, by their witchcraft, had deprived him of his senses. He began his memoir in August, 1807, and after frequent interruptions, finished 1st December, when he immediately resolved to kill the two women the next day, that he might be delivered from his torments. For this purpose, he thought of buying a knife instantly, but abandoned the design. The next morning, he reconsidered the matter, bought a knife, and sharpened it. He then went on Change, transacted some business, and dined at his parents; after which he took a walk, and meditated on the consequences of the act, sometimes renouncing his design, and again returning to it. He entered a wine-shop, and drank a pint of wine; he then played at a café, and at half past six o'clock, he went to the play. As it was still early, however, he drank another pint of

wine at a wine-shop, returned to the play, where he accomplished his design, as he acknowledged on his first examination. He believed, he added, that he had stabbed each woman but once. He had never spoken to them. He had sometimes done business with the husband of the elder woman, but never had courage to ask admission to his house. He had composed his manuscript, in order that he might leave to the world, after his death, a monument of his singular destiny, and had undertaken to justify the deed, which, after a long internal struggle, he had committed in a paroxysm of irresistible fury and violence, though conscious of what he was about at the moment.

So far, the prisoner answered, positively and rationally, the questions that were addressed to him. Two physicians, who, by way of precaution, had been called to attend the summary examination, declared that, after the clear and rational answers of the accused, they held him to be of sound mind, and that he could not have been mad. But, in a subsequent examination, the accused made no other reply to the questions, that were put to him for the purpose of penning down, in relation to the act, than that "he was mad, and lost his senses; he could not answer, because he was mad; he could no longer say his prayers, because he was mad."

This conduct of the accused, on the second examination, appeared to the court to be nothing but obstinacy, or a mere feint; for on the first examination, which took place but a little while before, he was calm and collected, and had shown but little bad humor. Consequently, they read to him, that he might not sin ignorantly, the 363d and 364th articles of the first part of the Code, enacting that, whoever, by feigning insanity, tries to deceive the Court, or obstinately persists in not answering the questions addressed him, shall be punished by fasting and whipping. During the reading, the accused seemed to be violently agitated; he changed color, and wept profusely, but answered none of the questions that were put to him. The Court then referred the case to eight

professional men, physicians and surgeons, gave them the memoir of the accused, as well as a copy of his verbal answers, and proposed to them the two following questions, to examine and answer.

I. Is the accused really mad, or is he feigning madness?

II. Can his act be imputed to this cause?

The professional men, in their report, considered the allegations of the accused, relative to his physical constitution, to be devoid of foundation. They declared that he had no defect of body, that his limbs were sound, and that he had the requisite quantity of blood. They added, that the present disorder of mind was only a feint; but they thought that the accused, in consequence of the tumult and derangement of his imagination, had been insane, and that during the paroxysm of insanity, he had not acted maliciously and with a design to harm, but committed the act in a moral state, to which crime could not be imputed.

The Court again summoned the accused, in order to examine him as to his intention in committing the double murder. He answered, "It may be clearly seen, from my own picture of my life, what was the motive of this action." Then reflecting a few minutes, he continued, "You may ask me what questions you please, I can only answer what I have already answered,—that I have lost my senses."

As, notwithstanding all the representations that were made to him, it was impossible to get any answer from him, they put a stop to the examination, and gave him the space of three days, the time fixed by law, to prepare his defence. During this interval, several witnesses gave some very precise information, relative to the intellectual faculties of the accused. The prisoners, who were near him and the jailer, deposed that he conducted peaceably, spoke to no one, and appeared to be always musing. People, who had formerly employed him, described him as a regular, attentive, serious and very abstracted young man, but, at the same time, head-

strong, high-spirited, and particularly vain of his person. His father-confessor and parents, said, that he had always enjoyed good health, and was addicted to no excesses ; that he was of a quiet character, and was kind to his parents. When the three days of preparation had elapsed, and he was asked by the court for his defence, he answered, "I am mad and have lost my senses, and know not what I did." Two days after, a clergyman sent a note to the court, certifying that four or six days after the assassination, the father of the accused came to him to confess, and that, after confession, he observed to him that his son's conduct had always been regular and quiet, indeed ; but, from his earliest youth, he had evinced some signs of madness about the period of the new moon, such as swearing and making a great racket in the house ; and that at certain times he had left home, and undertaken journies more or less long. As the father of the accused had been already heard in his oral deposition, the court made no use of this certificate.

Opinions being divided, after the inferior and superior tribunals had deliberated on the question of the accused's responsibility for crime, the superior tribunal decided that all the proceedings at law should be communicated to the faculty of medicine at Vienna, in order that they might fix upon the points, on which the professional men of Trieste should give their opinion, so that they might be enabled to judge, with a full knowledge of the case, whether the accused committed the act in his right mind, or in a state of mental derangement.

The faculty concluded, that the three following questions should be proposed to the professional men at Trieste.

1. Does it appear, from the trial and other circumstances that have been noted, that the accused, during or after the assassination, has been mad ?

2. If it is thought that madness took place, at one or the other of the above-mentioned periods, by what facts and circumstances can it be proved ?

3. What idea do the professional men at Trieste attach to the term mania?

The faculty also expressed the opinion in this report, that the accused had never been mad, neither after, before, nor during the murder. He was not so before it, because none of the actions and circumstances mentioned in the verbal process, indicate it; because the physicians who assisted in the first examination, declared that he was in his right mind, and those who next examined him said his madness was feigned; and because the declaration of the prisoner, that he was mad and had lost his senses, proves precisely the contrary; since a person really insane, never proclaims himself to be so. Neither does there appear from the trial a single action or circumstance, by which it can be legally proved that the accused was mad, either before or after the murder. Let us barely call to mind the facts in the case, as they occurred. A young man, of an inferior condition in life, headstrong, full of self-love, but otherwise quiet, industrious, and healthy, falls in love with a pretty young woman, who lives on the opposite side of the street. For two years, he seeks every occasion to see her, and at the play, always stations himself near her box, that he may have a better view of her. His passion reaches the very highest pitch, and, without speaking to her, without making her acquainted with his feelings, he forms the design of killing both her and her constant companion; because it seemed as if he never should succeed with her, and he was desirous of being delivered from his sufferings. Nothing that appears on the trial, relative to his conduct on the day of the murder, as well as the day before, presents the least indication of madness, or mental impotence; on the contrary, every thing indicates reflection and the use of reason. The accused plans the assassination, and chooses the time, place and means for executing his purpose and insuring its success; his resolution wavers; he has a long struggle with his feelings, because he knew the consequences of his undertaking; and to shield himself from these conse-

quences, he takes care to carry with him, on the day fixed for accomplishing his object, a manuscript just finished, which should justify his conduct. He attended to his usual business on Change, dined with his parents; played at the café, drank twice, a moderate quantity of wine at a wine-shop, and all this took place without any one observing in him the slightest derangement. He goes to the play, and comes out because it is too early; he returns, and being well convinced of the presence of the two women, enters their box without injuring the door, and promptly committed the double murder. Neither are there any traces of alienation of mind in the previous conduct of the accused. All who had employed him, so far as they had been heard from, have described him as a regular, industrious person. He made no foolish or improper attempts to introduce himself into the house or company of the two women. It is true, the accused executed his purpose in the theatre and in the presence of every body, but this nowise proves his madness, for he confessed himself, that he was unable to perpetrate the deed any where else. No conclusion can be drawn from the fact, that he did not attempt to escape; for, besides that he could hardly expect to get clear, he probably trusted to the memoir he had prepared, for his justification. This memoir is methodically composed, and is all written on the same kind of paper and with the same kind of ink; consequently, it has been composed within rather a short space of time. On the day of the assassination, the accused takes with him this paper, which is to serve in his justification, and to the same motive we probably owe its existence. If the accused really writes, that the elder of the two women had bewitched him, it does not indicate madness, but a superstition, still quite common in Italy among people of his condition. The faculty concluded therefore, from all these circumstances, that there was no evidence that the accused was laboring under total or partial insanity. Nevertheless, in case his insanity should be positively proved, the faculty are

of opinion, that he could not, with safety, be let loose on society ; since the difficulty of determining whether his disease is cured or not, would be increased by the circumstance, that no trace of mental alienation was discovered in him, previous to the terrible murder he committed.

The questions prefixed by the faculty to their opinion, were sent to Trieste, and the two tribunals were enjoined to deliberate anew on the affair, after the professional men should have given their opinion, and submit the result, with all the proceedings, to the supreme judicial court.

We now proceed to give an extract from the opinion of the Trieste physicians, omitting the numerous quotations by which it is supported.

The accused was laboring for a long time under a profound melancholy, which transformed the phantoms of imagination into real objects, deprived him of his reason, and finally degenerated into furious melancholy. In one of these paroxysms of fury, he committed the double assassination. His nervous system is extremely irritable, and he has the sanguine-bilious temperament ; so that the slightest cause gives rise to the most violent excitement of the feelings. The outward appearance of this person indicates melancholy, and this indication is strengthened by his quiet conduct, his vivid imagination, and that constant restlessness, which, without any plausible reason, has kept him moving about from one place to another. One circumstance that may have contributed, in some measure, to increase this melancholy disposition, is, that the accused, having taken the itch when sixteen years old, was not properly cured by the use of sulphurous ointments. The action of this morbid matter repelled upon the nervous system, already very irritable, probably engendered that form of mental derangement, called by physicians, *Melancholia Narcissi*, in which the patient has a singular regard for his own person, and believes himself an object of universal adoration among the women. Several witnesses have said

that such was the state of the accused. His melancholy explains his discontented state, his unceasing restlessness, and his fondness for journeying without any object in view, and destitute of the necessary means. For this reason, too, he was able to bear extreme cold, heat, and nakedness, without material injury to his health, which, physicians say, is peculiar to melancholy temperaments, when their imagination is occupied with the images they have created. Besides, the accused lived opposite the two women, which operated so powerfully upon him, that their images were constantly before his eyes; and thus new aliment was furnished to his excited imagination. Hence the nocturnal visions that he took for realities, and his indomitable passion for the younger woman, which changed his *Melancholia Narcissi* into a *Melancholia Amorosa*. It matters little, that the accused has properly performed the duties of his condition, and has done nothing indicative of mental derangement. We know that it is one of the peculiar characters of monomania, that the patient, on every other subject, follows the suggestions of sound reason. The frequent use of hot drinks, and particularly the self-abuse, occasioned by his heated imagination, in which the accused habitually indulged, so contributed to increase his insanity, according to the numerous observations and testimony of several physicians, that, on the slightest cause, it was converted into fury; and its indications on the accused, may be seen in the want of sleep, love of solitude, and the almost continual singing in his ears. In such a maniacal disposition, the accused wrote the history of his life. He portrays his sufferings, whether real or imaginary, with much vividness of feeling, and we can conceive how, his imagination becoming extremely heated, towards the end of his narrative, he resolved to kill the apparent authors of his torments, and how, in a moment of fury, he accomplished his design. The preparation of the instrument, the choice of means to effect his purposes, does not prove that the mind of the accused was not in a state of derangement. We

know, in fact, that a maniac acts with regularity and order, in every thing that concerns his insanity, and the attainment of the object in view. The most common observation teaches, that people in severe fevers, whose reason has wholly left them, will invent the most ingenious means for committing suicide, on which they have determined. From these observations, the professional men of Trieste conclude, that the accused first suffered from melancholy, which was afterwards converted into insanity, and that, in a paroxysm of insanity, and in a moment of total absence of reason, he committed the murder. Immediately after, the paroxysm ceased; the violence of his passion and his vengeance being satisfied together, and the sight of blood affecting his feelings, the tumult of his imagination was calmed, and the equilibrium of his mind restored. Thus are explained the quietness and indifference of his conduct from the time of the first examination.

The interval of tranquillity that succeeded, and which is quite common in insanity, is the cause of the reserve and the laconic answers of the accused at the time of his last examination, and of his weeping on account of his present situation. These circumstances strengthened our belief in the previous derangement of his mind. The medical men concluded by observing, that having again examined the accused, prior to finishing their report, they found him in a state of apparent tranquillity. It seemed that a cutaneous eruption, which had broken out over his whole body, had contributed to this result. The acrid matter, which, before, rendered his nervous system so irritable, being disposed of by this outlet, the wild looks of the accused, and his weak, small, nervous pulse, would indicate that he had always a disposition to insanity. For this reason, they would not hazard the opinion, that the accused was entirely cured of his moral disease.

Notwithstanding this opinion of the physicians, the inferior criminal tribunal, according to the utmost rigor of the law, pronounced sentence of capital punishment

upon the accused. The superior tribunal, guided by the opinions of the physicians, decided that the case was not a matter for criminal process.

The supreme judicial court transmitted the new declaration of the Trieste physicians to the faculty of medicine in Vienna, in order that they should pronounce a definitive opinion. The faculty began by laying it down, as a necessary principle, that, in cases of legal medicine, we are to decide on the nature of the act, not from the presumption, or simple possibility, of what might happen in analogous cases, but from the facts proved, and the accessory circumstances which may have determined the act, and which are ordinarily set forth in each particular case. Consequently, after examining the new declaration of the Trieste physicians, they concluded to persist in their first opinion, viz. "that, from the documents they had inspected, there was no proof that H** was insane at the moment of committing the double murder." The following are the motives of this assertion.

1. The faculty of medicine, not feeling warranted, for want of clear facts and accessory circumstances, in its first opinion, to admit the alienation of the accused before, during, or after the murder, as proved, could not now alter its decision, because the new documents presented no new fact, nor clear circumstances, that could furnish any certain and positive data upon the mental derangement of the accused.

2. The remarks of the Trieste physicians, on the physical constitution of the accused, on his physiognomy, and the itch which he had when sixteen years old, or more than thirteen years ago, and which continued two months, and was cured by external applications, simply proves, that, under all these circumstances, there is a possibility of the alienation which sometimes results in different subjects, as is shown by the numerous quotations adduced in support of this opinion, but it does not follow that it exists in the person whose case we are treating.

3. In fact, the reality of alienation could not, on the principles of legal medicine, be judicially proved, except by certain manifest signs, characteristic of this state of mind ; and in the present case they have not cited, nor have they indicated, very positively a single one.

4. One of the Trieste physicians says, in set terms, in the opinion p. 414, that the family of the accused never observed in him the least signs of alienation. Besides, none of his companions who have played with him, nor the woman who sold him wine in the shop, immediately before the murder, remarked the slightest trace of mental alienation. This same physician observes, in conclusion, that it was impossible to recognise the madness of the accused, without having been informed of it beforehand, which, in other words, is equivalent to saying, that he would be considered mad by those only who were already prepossessed with the belief that he really was so ; for the alienation, not being manifested by any external sign, it was not perceptible to one not pre-occupied with the idea.

5. The memoir, narrating the history of his life, and composed with some effort of reflection, and which, as he himself says, was to serve for his justification, cannot be considered as a trust-worthy document, as well upon the principle of law, that *nemo testis in propria causa*, no one can be witness in his own cause, as because the truth of the facts there related has not been diligently investigated.

6. Finally, in the two interviews of the Trieste physicians with the accused, and in the verbal process that has been drawn up, there occurs no trace of mental derangement, previous or present. The physicians have even unanimously agreed, that the accused is not at present in a state of alienation. It is to be regretted, that when the Trieste physicians examined the prisoner, and conversed with him, they so superficially followed the train of ideas, necessary to establish the madness of the accused, and that, in breaking off the interview at the moment when it was becoming most interesting, and,

perhaps, in a physiological view, most instructive, they should have suffered the thread to escape, which chance had presented them, to find their way through this labyrinth ; since the accused, by the disorder of his motions, and change of features, made known the embarrassment and disturbance, under which he was laboring.

The supreme court, after repeated deliberations, pronounced the following decision. "The indictment found against H * * for murder, is dismissed, for want of sufficient proof of his responsibility for crime. In the mean time, that the public safety may not be jeopardized by the accused, he will be handed over to the police for perpetual confinement. He will also pay the costs of the process."

Conformably to the dispositions of the 455th article of the first part of the penal Code, conferences have been held with the police court, in execution of the sentence, and the accused has been placed in a house of detention.

Excepting the clause relative to the costs, the sentence is perfectly adapted to the nature of the action, and is honorable to the intelligence and sagacity of the judge. The faculty of Vienna, with remarkable shrewdness, advised his detention for life, in case madness should be proved, because, in such cases, nobody can warrant a cure. It may indeed be admitted, as generally true, that relapses are to be feared where there is a natural and very strong disposition to the disease in the very organization itself.

I think, with the physicians of Trieste, that H * * should be considered insane. What motive could he have, in complaining of the loss of his health, and of his physical exhaustion, while he was full of strength and health, if he were not laboring under a total mistake as to his condition ? If his mind had been right, would he not have seen that his appearance would instantly give the lie to his assertion ? The statement made by his father to his confessor, that, from his infancy, he had committed acts of madness, and was in the habit of quitting his father's house, does not prove, indeed, that he

would afterwards become mad ; but it does prove the existence of an extreme natural irritability, and a very strong disposition to see visions, and conjure up phantoms, when he experienced any violent agitation of the feelings.

The choice of the object of his love, also, proves his predisposition to madness. There is some sense in the saying, that he who falls in love with a queen, and, to use a common expression, becomes mad, has not only *become* so, but was already in that condition. H * * declared that his love was the effect of the sorceries of these two women.

The faculty of Vienna rely on the declaration of the professional men present at the first examination, who pronounced the murderer to be in his right mind, and his madness to be feigned. They rely also on the testimony of the individuals, who had played with the murderer, and of the servant in the wine-shop. But why, in a discussion involving a man's life, do the faculty of Vienna refer to people, who allege nothing in support of their opinions, in preference to the assertions of the Trieste physicians, founded on experience, which teaches that a person may be insane in one respect, and sane in every other ? Have these physicians answered the public expectation, by indulging in vain subtilties, and a blind zeal against vice ? Are we not taught by daily experience, as the Trieste physicians have observed, that the insane are accurately conscious of the disorder of their sensations and ideas ? Do the faculty of Vienna believe they have refuted these facts, by saying, that it is only a vain display of learning to mention them ?

They conclude that the madness was feigned ; but whoever designs to feign madness, must be well acquainted with it. But the natural history of this state being known to but a very few physicians, how can it be supposed that this young man, extremely ignorant in this respect, should be acquainted with it ? The person who feigns, is not contented with declaring his dis-

order,—with saying, “I am mad, and have lost my senses;” he seeks to make it be believed, by wild and extravagant conduct. The murderer does not say, that it *seems* to him that he has had visions, but says that he is miserable and in despair, because he has *really* had them. In other cases, where there cannot be the slightest suspicion, that the insane are anxious to shield themselves from a sentence of death, we often hear them complaining of their madness in the accents of affliction and despair.

I admit that a criminal act, committed in a lucid interval, renders the person responsible; but, in regard to people who are subject to periodical fits of madness, we cannot be too cautious in deciding, whether or not, the act was committed in a state of perfect mental soundness. In cases of this kind, the decision is not difficult to those who possess the necessary information. The faculty of Vienna say, in support of their opinion, that the murderer chose the time, place, means, and occasion, most suitable for the execution of his design. But is not the very same thing done by those who commit suicide, destroying their life under the influence of the most terrible of all the forms of mental alienation? Do not the faculty of Vienna know that the most furious madmen, in the middle of their most violent paroxysms, act in a consistent manner?

The motive of H**, in assassinating the two women, only proves his madness. He was persuaded that they had bewitched him and made him wretched. Certainly, it cannot be said that he murdered the object of his love in a fit of jealousy, and with what could he reproach her companion?

H**, in manifesting his mental anguish by the tumult and disorder of his motions, did not show that he was not mad; for the most raving madmen are often tortured by the most bitter and unjust remorse. A woman got into violent rage every morning; she broke every thing in pieces, and abused whoever came near her. When put in a straight waistcoat, she calmed down. She re-

membered very well every thing she had done, and was so full of repentance, that she believed herself deserving the severest chastisements.*

Unfortunately, many insane people may be condemned, from the fact that, during the examinations, they speak and act in a rational manner; but the time of the examination is not that of the criminal action. Besides, the insane are not only consistent in their madness, as we have shown, but cases are daily occurring, when the mental disorder is manifested only on a single point. So long as the diseased point is not touched, we cannot observe the least trace of madness in conversations that turn on other subjects. In a species of periodical madness, where the patients are irresistibly impelled to commit murder, Pinel considers it a diagnostic symptom, that they are conscious of the atrocity of their action, and show no derangement of intellect, or imagination.

Finally, whatever the faculty of Vienna may say to the contrary, the extreme mental disorder of H** is proved by the fact, that he chose the theatre wherein to execute his design; that he made no effort to escape, and manifested no disposition to save himself. No sane man acts in this manner, unless excited by some sudden freak of unruly passion. But that H** was not at all influenced by anger, or a transport of passion, is evident from the fact of his dining peaceably, and attending to his business as well as ordinarily. The act of writing down the motives of actions, often precedes desperate resolutions, even in cases of suicide; and here is furnished a conclusive proof of the torments experienced by H**, and of his conviction that he had a right to avenge himself on both the malicious enchantresses.

Finally, it appears to me, that the judge ought not entirely to have neglected to take into consideration the prejudices that may have determined the crimes. They are among the moving springs that give rise to an ac-

* Pinel, l. c. p. 183.

tion, and, in many cases, ought to be considered as extenuating, in others, aggravating motives. If it often seems dangerous for a judge to treat a criminal with mildness, on account of the prejudices he has imbibed ; governments are under an obligation still more indispensable to extirpate these noxious prejudices. Let us say, with Beccaria,* that we cannot properly call a punishment just, that is necessary, so long as the law has not employed, by way of preventing the crime, the means best suited to the circumstances of the nation.

Continuation of the Instinct of Murder in a State of Mental Alienation.

A baker of Manheim, who, from his youth, had shown in all his enterprises a very timid character, and who had for ten years experienced attacks of deep melancholy, also experienced from this last epoch a general weakness of nerves. He imagined that the purchase he had made of a house, caused his unhappiness, and that of his wife, whom he greatly loved. He complains incessantly, and laments his situation, which he regards as most desolate. He has sometimes had paroxysms of insupportable agony : he continually wishes for death, and would long since have inflicted it on himself, if, to use his expression, it were not a sin. He often speaks of a French blacksmith, who killed himself after destroying his wife. "You are to be pitied," he will sometimes say to his wife, in the most moving tone ; "I must do as the French blacksmith did." We advised him to separate himself from his wife, but we know not whether he has adopted our precaution.

A cordwainer, at Strasbourg, killed his wife, and three of his children, and would have killed the fourth, if it had not been withdrawn from his fury. Having

* Crimes and Punishments.

committed this shocking action, he ripped open his own belly; but the wound not being mortal, he drew back the knife, and pierced his heart through and through. This man had the reputation of being mild and faithful, a good father, and a good husband. No one could discover what tempted him to this horrible action. At Leopold, in Galicia, a certain K. killed his wife, the object of his warmest affection, and would then have shot himself with a pistol, but missed. While people were forcing his door, he fired a second pistol and killed himself. His conduct had always been blameless, and all that could be learned was, that he was discontented with his condition, and thought he deserved a better. At Hamburg, R—, a respected instructor, killed his wife and two small children, sparing two others who had been confided to him. A similar circumstance happened at Amsterdam, and several other facts of this kind have come to our knowledge.

Since these notices were written, I have read similar accounts in several journals; but not one has been judged with a knowledge of the cause, and in that philosophical spirit, which results from a profound acquaintance with the principles of human nature.

Again, a man at Frankfort, killed his wife, five children, and then himself. The authorities were embarrassed in the choice of outrages to be committed on his body, to avenge society thereby, as the expression is, for so atrocious a crime. A more recent example corroborates what I have already advanced. "A man named Guillon, of Tours, believing himself poisoned by drugs, which he had bought of a dealer in orvietans, resolved to murder him, and then destroy himself. Not finding the man at home, of whom he thought he had reason to complain, he wreaked his vengeance on his wife, and having killed her in a shocking manner, he was proceeding to drown himself, when he was arrested. Being condemned to death, the respectable pastor, charged with the spiritual concerns of the prisons in that city, was enabled, by the precious aids of religion,

to restore calm and consolation to the bewildered spirit of Guillon, but the unfortunate man constantly persisted in his desire to die, and not to appeal from his sentence.”*

When such unfortunates do not succeed in destroying themselves, they surrender themselves at once into the hands of justice, and desire nothing more strongly than death. The execution of such a subject, it is said, is of little consequence one way or the other, though it is important that his family should not be disgraced. And why inflict punishments for actions committed in a state of insanity? Are you afraid of giving people an example that may be followed by fatal consequences? Then enlighten people on the subject of such diseases. Your first duty is to be just, and not commit cruelties that can have no object.

Since the publication of my large work, Falret, in his “*Treatise on Hypochondria and Suicide*,” has recorded many facts, that are so much the more entitled to be noticed here, inasmuch as they are applicable to criminal legislation.

Disposition to suicide, and, in consequence of it, to murder, proceeding from an error of judgment relative to the crime.

“Margaret K—, a young woman, twenty-three years old, was sent to the house of correction in Onolzbach, Sept. 1755, in consequence of many crimes she had committed. Her reception was followed, as usual, by whipping and bad treatment. The whip made use of for this cruel purpose, wounded her seriously in the left breast, and caused her very severe pain. This treatment made such an impression on her mind, that she began to loathe life, and, to get rid of it, she determined

* *Journal des Mairies*, June 30, 1818, No. 380.

to commit murder. She thought that, in doing so, there would be sufficient time for repentance, which she should not have, if she waited for her natural death. She formed her plan in cool blood, and executed it on another woman in the following manner:—

“One Sunday she complained of being unwell, and requested that she might be excused from attending divine service. A very simple, half-idiot girl, named Mederin, was set to watch her. Margaret persuaded this girl, that there was no hope of their being freed from their miserable situation, unless they decided on death, and proposed to her to be killed first. Mederin readily consented, with the only condition that she should suffer no pain. Margaret, therefore, accomplished her plan on Mederin by cutting her throat, which she held out to her, and the wound was received with the most perfect resignation.

“When Margaret was questioned in court, as to her motive in committing this horrible murder, she answered, that it was the blows and sufferings she endured in the house of correction. She thought to herself, ‘if I take my own life, my soul is lost forever; but if I kill another, I shall not only die, but shall have time to repent, and God will pardon me.’ When asked if she entertained no malice against her victim, or had been offended by her, she replied, that she could complain of no kind of injury on the part of this companion, who, on the contrary, was in the habit of coming to her, and communicating her troubles, as to a friend.”

When asked if she slept peaceably, after committing such a dreadful deed; she said, that she had prayed to God, before going to bed; that she slept well; and, on waking, she again prayed. She seemed perfectly calm and collected during the examination, and until the moment when the nature of her crime was explained to her; but when made to understand, that, far from having taken the path to happiness, she had incurred the eternal wrath of God, she wept bitterly. Her physician

attributed her crime to despair and *tedium vitæ*, but the law paid no deference to his opinion, in its decision.

*Disposition to suicide, and consequently to murder,
produced by religious fanaticism.*

“Daniel Voelkner, born at Friedland, six miles from Koningsburg, in Prussia, lost his father at the age of fourteen, and at this time he was apprenticed to a shoemaker. His apprenticeship finished, he went to Dantzic, to work at his trade ; but before he had earned enough to procure the necessaries of life, his travelling chest, containing all his tools, was stolen from him. As it was impossible for him, after this, to labor, he enlisted for the term of sixteen years in the service of his Danish Majesty, and was sent to Copenhagen.

“Although, according to his own account, Voelkner suffered a good deal from his officers, yet he faithfully discharged his duties till the sixteen years expired, when he resolved to return to his native country. On his way thither, he met with a retired soldier, who was a master-shoemaker at Meyburgh. He made an arrangement with this man, but the work not pleasing him, he quitted the first day. Thence, he went to a tavern, and enlisted in the cavalry, and March 11th, 1753, he joined the regiment of Wentherkein.

“It appears that, from this time, till the 24th May following, thoughts of murder began to agitate his mind, and unfortunately they seemed to owe their origin to religious enthusiasm. His ideas of the happiness of a future life were of the most vivid kind, since they terminated in weariness of life, and in the desire of throwing off his mortal burthen. The only way which presented itself to his mind, to obtain this desirable end, was to forfeit his life by murder. After the accomplishment of this act, he imagined he should have time enough to make his peace with God.

“According to the testimony of his comrade and bed-fellow, this man lived a pious life, singing religious hymns and reading godly books, one of which he offered to his companion for his edification. He often admonished him to become devout, adding, that he himself had been very wild in his youth, but that he was now in the right way.

“One night, when in bed, the idea of teasing Voelkner a little, on account of his extravagant piety, occurred to his bed-fellow. He said, he looked upon it to be a thing unreasonable in some people to act so uncommonly devout a part, as if with a view of making it appear that they alone merited happiness hereafter. Upon which Voelkner answered, it was extremely unjust in him to think so, and immediately began to cry out, ‘I must, I will be happy hereafter.’ These words he repeatedly uttered with a loud and harsh voice, tossing his legs and arms about in a violent manner, and starting from one part of the bed to another. After this, he broke forth in sorrowful complaints about his past life, and began to exclaim, ‘I am come to this at last, I am come to this at last,’ which words he repeated three or four times. Upon his companion asking him to what he was come, he answered the same thing.

“According to Voelkner’s own testimony, he had long entertained the idea of murdering a child, because he thought that, after having confessed and made his peace with God, he would soon reach that place, and that happy life, for which he sighed. Three weeks previous to the act, he suffered indescribable anxiety and uneasiness. It appeared to him as if he was obliged to kill some one. On some nights he slept well, on others not at all; but the idea of murdering some one always returned with the light of the day.

“Three days before he committed the crime, he went to the church-yard, and played with the children who were there, intending, if he had an opportunity, to kill one of them. At last, on the evening of May 23d, he accomplished his horrid purpose. A little girl, who had a companion

in the house where Voelkner was quartered, came that evening to pay her a visit. The landlord of the house and his comrade were both gone out about an hour before. Voelkner invited the two little girls into his room, and divided between them his supper. Immediately after which, placing his hand on the forehead of one of them, he bent her head back, and with a knife, which he had sharpened on purpose a day or two before, he cut her throat. He then went to the guard-house, surrendered himself, told what he had done, and acknowledged that it now caused him much regret. He was immediately taken to prison, where he slept calmly the whole night; for he acknowledged, that the uncommon uneasiness he had experienced for three weeks before, ceased upon his committing the act.

“During his examination he answered like a reasonable man, and expressed himself with precision, behaving himself decently, both in word and deed. He narrated the principal circumstances of his life, and said, he knew perfectly well what consequences were to be expected from such an action, and that he would be obliged to answer with his blood. But this thought, at that time, was by no means disagreeable to him.”

Disposition to suicide; double homicide.

Catherine Hansterin, forty-five years old, lived in the village of Donovorth. Twelve years before, she was married to a man of harsh and austere manners, and had enjoyed pretty good health, never having suffered any indisposition, except some trifling febrile attacks, and some slight menstrual irregularities. In 1785, she was detected stealing milk in the village, and begged most earnestly, that her husband, of whom she stood in great fear, might not be made acquainted with the fact. It was promised her, but the husband got some imperfect account of it, and, finally, discovered the whole truth. From the testimony of several persons, it appear-

ed that the discovery of this theft made a deep impression on the mind of the woman, as much on account of her own reputation, as of the bad treatment she had to fear. She became melancholy and depressed. It appeared, also, from the written examination, that she confessed, though (what is rarely the case with Catholics,) her mind derived no consolation from this act. She often prayed without being aware of what she said, and was often seized with violent headaches, when she was unconscious of what she did.

“ December 1st, 1786, she was still uncertain whether her tyrannical husband had any knowledge of the theft. Before this period he had frequently threatened to kill her, if what was said against her was true, and on that day he beat her cruelly. Nevertheless, before the court, she did not seem to remember the bad treatment she had received. Being asked how many times her husband had beaten her, she answered, ‘I know nothing about it; my husband knows; I have no recollection.’ After suffering this cruel treatment, she retired to rest, fearing still more for the morrow. Her daughter, about seven years old, came to her bedside and prayed with her. The mother, having made up her mind to leave her husband, asked the little girl if she would stay with her father. She answered, No; she was afraid of him. The next morning, after a fervent prayer, she abandoned her home, carrying with her her little daughter, and her other child two months and a half old. When about leaving, she again asked the little girl if she would not prefer staying with her father, and she replied, that she had rather die. The thoughts which this reply brought to the mother’s mind, the distress that afflicted her, the fear of what would happen to her children in case of her death, and, at the same time, her ardent desire to terminate her own existence,—all these united, gave rise to the barbarous design of drowning her two children.

“ Having arrived at the bank of the Danube, she made her little girl kneel down, and pray God for a good

death. She then placed the infant in the hands of its sister, blessed them both, and, making the sign of the cross, pushed them into the river. This done, she returned to the village, and told what had passed."

This case, as well as the two preceding, are taken from the *Psychological Magazine*, vol. vii. part 3. Crichton has given them a place in his excellent work on Madness, and I have made my translation from the English.

Suicide preceded by homicide.

M***, aged forty-seven, of a bilious-sanguine temperament, and of a hot, impetuous disposition, was born of parents sound in mind and body, passed the early part of his life without any severe disease, and served six years in the army. He married, and became the father of three children. He loved good cheer, and in this way had consumed his little property.

For a long time, he was tortured by jealousy, and kept a careful watch over the conduct of his wife. He had already had some warm altercations with her on this subject, and finally, one evening, after he thought he had detected her *flagrante delicto*, he armed himself with a mallet and knife, went to bed, and feigning sleep, waited till his wife was soundly asleep. When he saw the moment had come, he struck her on the head with the mallet, and finished the murder, by repeated stabs with the knife. The next morning, he rose from the bloody bed, sought out the attorney-general, (*procureur imperial*), told him he had killed his wife, that he deserved death, and was going, of his own accord, to prison. He was carried into the town of * * *, to take his final trial. Although he constantly maintained, that he was in his sound mind, that he killed his wife because she deserved it, and that if it could be done over again, he should not do otherwise, yet, guided by principles of legal medicine, it was decided that M***

was laboring under a true mental alienation. He was therefore remanded as insane, and sentenced to perpetual confinement in the hospital of that place. Some time after, this unfortunate man procured a pistol and blew out his brains. He left behind a letter, in which, after expressing his horror at injustice, he added, that if he had not killed himself after killing his wife, it was because he preferred to receive death at the hands of the executioner; but since they were unwilling to inflict on him so just a punishment, it belonged to him to discharge a debt due to society.

So, therefore, the different degrees of activity and the independent action of this propensity, in disease as well as health, prove it to be a fundamental quality, and, consequently, belonging to a peculiar organ.*

Incendiaries.

In prisons, we have examined criminals of every description, even when ignorant of what organ it was, whose vicious activity had led to the crimes for which they were confined; and in all who, from motives of revenge, or for the mere pleasure of seeing a fire, have committed arson, we were astonished to find a large development of the same cerebral parts, whose vicious activity produces the imperious disposition to murder. Reflecting a moment on the biography of the most sanguinary monsters, that have directed their fury against their own species, we saw, in fact, that they all found an atrocious pleasure in desolating their country by conflagrations. We have already mentioned some acts of Caligula and Nero. We recollect the band of Auxerre, known by the name of Chauffeurs, and it is probable,

* In treating of suicide, while discussing the organ of circumspection, I shall show, that, in cases like these, as well as in those of suicide, there is not only an irritation of the carnivorous organ, but, also, some derangement of the organ of circumspection.

that the pleasure experienced by certain people in firing buildings, is but a simple modification of the disposition to murder. The German language itself would seem to confirm the idea, that the propensity to kill, and the propensity to fire buildings, are closely related to, or even founded upon, each other; since those who burn from premeditation, are called, in German, *Mordbrenner*, from the substantive *mord*, murder, *brenner*, incendiary. Thus, the law punishes the incendiary, as well as the homicide, with death, and laws are very often founded in the nature of things, even when we least suspect it. Our opinion is also strengthened by the fact, that there have been some individuals in a state of idiotism, or mental stupidity, who were borne on by an irresistible impulse to the commission of incendiary acts. In the prison at Freyburg, in Brigsaw, there was a half-imbecile youth, fifteen years old, who had set fire to nine houses in succession. When the fire was over, he thought no more of it; which proves that he was governed solely by an animal instinct. In No. 46 (1802) of a German journal, the *National Gazette*, is related the following very remarkable criminal case:—

“August 16, Maria Franck, aged thirty-eight, was executed at Schwabnunchen, and her body burned. Within five years, she has fired twelve houses in the borough where she resided. The losses occasioned by these fires have been estimated at over seventy thousand florins. On the thirteenth attempt, she was arrested, and delivered into the hands of justice.

“It is hard to conceive how this woman could have arrived at such a degree of depravity. She was a peasant's daughter, possessed extremely limited intellectual powers, could hardly read, and all her religious knowledge was confined to external observances. In her younger days, she had several attacks of disease, for which, instead of calling in a physician, they had recourse to an exorcising father of a Franciscan monastery in the neighborhood. She never had much regard for her husband; her union was not very happy, and

she had no children. Her husband treating her harshly, and paying her but little attention, she neglected her domestic affairs, and sought consolation in devotion. As her domestic concerns went from bad to worse, she abandoned herself to intemperance, and robbed her husband to procure the means of indulgence. About this time a fire occurred; in which she had no hand. From the moment she witnessed this fearful sight, she felt a desire to fire houses, which, whenever she had drank a few coppers' worth of spirit, was converted into an irresistible impulse. She could give no other reason, nor show any other motive, for firing so many houses, than this impulse which drove her to it. Notwithstanding the fear, the terror, and the repentance she felt, in every instance, after committing the crime, she went and did it afresh. 'The government caused her to be examined several times by physicians, to ascertain the state of her health, and the temper of her mind; *but they could find no sign of alienation.* She heard her sentence with Christian resignation."

These facts, however, would not have induced us to admit an analogy between the propensity to kill, and the propensity to burn buildings, if we had not found the same cerebral parts developed in incendiaries, that we had, in murderers; and if the crania of these two kinds of criminals had not presented the same prominences.

What is the fundamental quality of the disposition to murder—of the disposition to kill?

To answer this question at all satisfactorily, we must first go back to the circumstance that led to the discovery of this propensity, viz. the difference between the skulls of the carnivorous, and those of the frugivorous animals; the former having a prominence above the ear, produced by a large cerebral mass, which the latter have not. My position in regard to the discovery of this quality, was the same, as for all the other fundamental qualities or faculties and their organs. It would

have been impossible for me to discover such a quality or faculty, unless it had been manifested in the highest, or, at least, a very marked degree of activity; and I was under the necessity of giving it a name, derived from this high degree of activity. Another reason for this cause was, that the carnivora must not only be forcibly impelled by this inward propensity to kill creatures necessary for their support, but it must also teach them the kind of death to be inflicted on their prey. Hence the denomination, *instinct of murder*. As man is the most formidable of all the carnivora,—as he confines his ravages to no single one, nor a few species, like the greater part of the other carnivora, that kill only for nourishment, and indulges his ravenous propensity upon every living thing, not even excepting his own species, he may be called carnivorous, (*carnassier*;) with a better title to the name, than any other creature. But never, as some of my opponents, with equal assurance and folly, have sedulously endeavored to make people believe, never, in speaking of the *instinct of murder*, did I mean thereby, a propensity to *homicide*. My principle is, and I shall always adhere to it, that to designate a fundamental quality or faculty, common to man and the lower animals, we must choose a name that will be applicable to it in the brutes, as well as in our own species. But, certainly, a propensity to murder impelling to homicide, would be totally inapplicable to the natural destination of the carnivorous animals.

The propensity to destroy, or *destructiveness*, as Dr. Spurzheim calls it, gives a too general and extensive signification to the carnivorous instinct. Spurzheim derives from the same propensity, the acts of quarreling, pinching, breaking, tearing, burning, biting, devastating, demolishing, overturning, &c. The architect who demolishes in order to build,—the gardener who roots up one tree, for the purpose of planting another, cannot be charged with destroying; otherwise, there is no animal, frugivorous, or carnivorous, destitute of the propensity. And, finally, this appellation does not at all convey to the mind of the reader, the idea of the quality, whose

natural history we have been considering. Perhaps I, or my successors, may succeed in determining its fundamental power with more precision. For the present, it is enough for the reader to know exactly what I understand by the quality in question, and how the gradual development of its organ may, subsequently, become the material cause of the propensity to homicide.

If man had sufficient force of mind to recognize the true place assigned him by nature, he would discover here, too, a wise institution. When man came from the hands of his Creator, the Supreme Being surely foresaw that he would live with his fellows in a state of eternal war. Would it have been just for nature to withhold from him the means of ridding himself of his enemies? Have not they done their duty, who have condemned criminals to death; or they who, with fire and sword, have destroyed the enemies of their country? And if the human species should remain at peace, for a few ages only, it would, for that reason, inundate the whole surface of the globe; every animal would be displaced, the whole equilibrium of nature disturbed, and its order completely inverted. This is the why—the final cause—that war has such singular charms, to civilized as well as savage nations; that they seem to be born and to live for it; and that, of all other passions, it is the one of which they make the greatest show. It is well proved, that the first ideas of religion were warlike ideas; that one of the first attributes given to God by men, was that of *God of battles, God of armies*.

I ever recognize and revere the supreme foresight, and submit to its laws. Let those who seek for glory, in leading nations to the work of butchering one another, and who slaughter their fellow-men by thousands, know that they act not altogether of their own will;*

* But we would have them know, at the same time, that obedience to the higher sentiments, and a strict regard to the organic laws, are the only conditions by which these great evils are to be avoided. Great

that nature has placed in their hearts the rage for destroying their own species ; that, little as they suspect it, they are merely one of the instruments it employs for thinning the human population. Thus they figure by the side of devastating pestilences, and of all the disasters by which man is assailed, from within and from without.

The expression, *instinct of murder*, therefore, may be excused, even where man kills his fellow-man ; for they will never be said to commit homicide, who destroy those of whom the country must be rid. I would, therefore, wish to keep my first name ; but, as the multitude will always be tempted to confound murder with homicide, I prefer, for the present, that of *carnivorous instinct*.

Seat of the carnivorous organ, and its external appearance in the human cranium.

We ought not to expect to find a large development of the carnivorous organ in all murderers. There are unfortunate circumstances, in which an organ, even but moderately developed, may be so excited, as to acquire a high degree of activity. People who make rhymes in the delirium of fever, are not always poets. We

evils are permitted, that great blessings may be appreciated ; and examples of abuse and of human suffering tend to make known the conditions of health and happiness. We believe that man is destined to increase in perfection, as he increases in practical knowledge ; and that his ultimate perfection will depend upon the complete ascendancy and control of those faculties and sentiments which are proper to man. War is an evil which originates in the predominance of the animal propensities ; and the martial glory of nations is often nothing more than animal gratification. Not that wars are unjust or unnecessary, in the present state of the world ; but they are contrary to the dictates of the higher principles of our nature, and therefore should be opposed as destructive to the best interests of man. The natural consequence of indulging in wars, is to increase them ; and all influence that tends to subdue the passions of the human soul, will mitigate and lessen them.

ED.

frequently see persons, whose conduct has always been irreproachable, from a concurrence of unfortunate circumstances, committing actions which they have sincerely abhorred, and which they detested even after they had committed them. No crime is naturally more repugnant to my feelings than homicide ; still, looking to the very bottom of my heart, I would not venture to affirm, that I am beyond the reach of temptation under all possible events. A father, after educating a beloved daughter in the sentiments of honor and virtue, and believing he has secured her happiness by a settled match, sees this child, the object of his tenderest affection, dishonored by a vile seducer. At the moment of the consummation of the crime, this unfortunate father, hurried on by feelings as proper as they are heart-rending, becomes the murderer of the wretch who dishonors him. Would it not be a deplorable error, in legislation as well as the physiology of the brain, to confound such a father with the consummate cut-throat ?

Besides, the physiologist well knows that depravement of moral character, or a propensity to murder, is sometimes the effect of a chronic and masked disease of the brain. We have very often found the skulls of homicides, like those of maniacs who have been such for many years. In treating of lesions of the brain, I have related several cases, where the whole moral character was found to be changed after one of these lesions. Who is not aware of the consequences of diseases or mutilations of the generative organs ? None of my readers can be ignorant, how blindly the propensity to suicide acts, as well as that other mental affection, still more dreadful, in which the patient not only destroys himself, but, believing that he is inspired from on high, sacrifices others, and ordinarily those whom he most loves, his wife, and children. Such affections strongly show the necessity of caution in forming our opinion in cases of homicide, and that a righteous judge must have a profounder knowledge of man than is generally possessed by those, who, in applying the law to criminals, con-

sider only so much of the action as falls within the cognizance of their senses, and are capable of nothing but a literal interpretation of the law.

It must also be borne in mind, that the same degree of activity of an organ, may produce entirely different actions in different individuals. If we except idiotism and insanity, and cases of an entirely circumscribed excitation, actions are never determined by the activity of a single organ. The manifestation of a certain power will differ according to the strength and modifications of the action of the other organs. The propensity to murder, combined with courage, acts very differently from what it does when combined with deliberate malice; and still more so, when combined with philanthropy, &c. The possessor of superior intellectual powers, will know how to give his propensity a more favorable direction, than the man of feeble intellect. Education, habit, example, religion, morality, laws, &c., act on a man endowed with moral liberty, as so many motives for conforming to the social order, even in spite of his propensities. These are sufficient reasons, why a large development of the carnivorous instinct is not to be sought for in every individual who has been hurried to the commission of homicide, without being particularly disposed to it by his primitive organization. They will explain, too, why I am very far from considering a person as disposed to commit homicide, for the sole reason that he has the organ of this instinct largely developed. All we can confidently maintain is, that, *ceteris paribus*, a person who has this organ large, will be more easily induced to commit homicide, than one not naturally disposed to it by his organization. Amid the tumult of violent passions, the transports of jealousy, vengeance, and anger, the idea of revenging himself by fire and sword will be suggested to the former, while the thoughts of the other will take a quite different direction.

Having thus prepared the mind of the reader by these remarks, I now proceed to speak of the organ itself. Facts relating to this subject are so numerous, I must

be contented with recording a few, which particularly suggest some interesting reflections.

Comparing many skulls or heads together, we shall find some, in which the temporal and inferior-parietal region, that is to say, immediately over the ears, is flattened; while in others, this region is prominent and rounded out. This convexity exists precisely in the place where the temporal bones are so thin as to be transparent, and where, consequently, the cerebral parts beneath show their real dimension. When the development of this cerebral part is excessive, the whole portion of the cranium, from the inferior edge of the parietal bone, even to the ear, swells out; when less developed, the prominence is limited to the temporal bones. This region is marked vi. both on the brains and skulls.

In two of the Schinderhannes band, who had been guilty of more than twenty homicides, the organ of murder is very apparent. This region was extremely prominent, forming a segment of a sphere, in a soldier at Berlin, who was subject to an irresistible propensity to commit homicide, and who, on the approach of his paroxysms, which he was always aware of beforehand, caused himself to be confined, that he might be prevented from shedding blood. We found the same conformation in the girl that helped her mother kill her father, and who spoke of the parricidal deed with a smile, regarding it as nothing extraordinary. In a half-idiotical young man, who had killed a child from no other cause than obedience to a blind impulse; in a fellow called *Homme-dieu*, whose skull M. Brüggmann showed us at Leyden, and who pushed people from the dykes into the ditches below, solely for the pleasure of seeing them struggle with death; in a homicide belonging to Brunswick, who, with no other motive than the pleasure of killing, committed his second murder on a child; in twenty-five women guilty of infanticide, whom we had an opportunity of seeing in different houses of correction; in an assassin at Frankfort, who was executed after his second homicide; in another criminal, to whom

murder had become a habit; in Bouhours, who killed her victims with a hammer, in order to rob them of their money; in all the skulls of homicides in the collections of M. M. Habert, Sax, and Weigel;—in the skulls of all these people, I say, the same region was very prominent, and, consequently, the same cerebral part was very much developed.

In Bouhours, three organs had acquired a high degree of development. The excessive activity of one produced a propensity to steal; of the second, to murder; and of the third, to fight;—an unhappy concurrence, which can only explain the atrocious conduct of this monster.

Lepelley des Longs-Champs had the organ of murder largely developed, while that of courage was small. He planned a murder, which he made Heluin, more courageous than himself, execute. The latter was strongly disposed to steal, which explains why he was always ready to commit homicide, for money. I have subjected the skulls of Valet and Mercier to the same test; Valet committed a quadruple homicide on his mother and three aunts. Mercier assisted in the massacre, but without giving a single blow himself, only he prevented the women from escaping. He had been promised a sum of money by Valet. In Valet's skull, the organ of murder is well developed. In Mercier's, it is not. The organs of self-defence, (courage,) of circumspection, and of benevolence, are all small. The organ of sentiment of property, on the contrary, is very prominent; hence, we have baseness, malice, want of foresight, or stupidity, and, to finish the unfortunate combination, an inveterate propensity to steal. I have plaster casts of these crania, which are in the Royal Garden.

The skull of Voirin, hatter, guillotined at Paris nearly ten years ago, for having committed two murders, is very remarkable. If, when I first saw this head, I had never before known the organ, possessing the degree of development, which produces the propensity to murder, I should have discovered it in this subject. The region above indicated is extraordinarily developed, and very

prominent, which explains the impulse that hurried him on to the commission of homicide. The following passage is taken from the record of the accusation of this murderer.

Perrin was descending the stair-case, holding a light, and preceding Voirin. Suddenly he felt a violent blow on his head. His hat fell off and extinguished the light. Frightened for his life, he struggled with his assassin, who redoubled his blows, sprung upon his victim, threw him on the ground, and, placing his knee upon his chest, continued to strike him. Perrin, however, did not entirely give up; he had strength enough left to seize his murderer by the hair; he also bit his hand severely, and wrested from him a piece of iron with which he was armed. Voirin got back the iron, and struck Perrin again, who still evinced compassionate and generous feelings for his assassin. "Wretched man," said he, "I have known you from infancy, and you are bent on murdering me! But I knew your father. I would not harm you; save yourself." He was about to open the door to let him out, when Voirin sprang upon him, and began striking him again. In the mean time, Perrin succeeded in opening the door, and called for aid. Hearing his cries, Voirin now determined to commit the crime. "I am a lost man," he exclaimed, "I am a monster, a cut-throat." These expressions would seem to refer to some previous crime. He even said, "that he was urged on by a frightful impulse, which prompted him to kill." Arrested at the very moment of finishing the murder, he exclaimed, "I feel the bitterest remorse; I am impelled by an irresistible power to shed the blood of my fellows; two months ago, I bought pistols for the purpose of blowing out my brains; I am sorry I did not do it."

When M. Danloux, after the murder of Geyer, observed the accounts of Voirin's expenses, and censured him for them, and even suspected his honesty, Voirin said that there was a woman who supplied his extravagance. In his defence he accounted for his money, by

saying that he won it at play, a short time after the murder of Geyer.

Voirin, indeed, was not an idiot, and, consequently, not absolutely incapable of reflecting, or of being guided by motives of an elevated order. For this reason, he wished to destroy himself, that he might prevent the crime to which he felt himself impelled; but his very low forehead shows, that his intellectual faculties were extremely small. The upper part of the frontal bone is flattened, indicating a want of benevolence. The head of the fratricide Dautun, is cast almost in the same mould. When, to such an unfortunate organization, there is joined a want of education and of moral and religious instruction, it is easy to foresee how such a character would terminate, how little soever circumstances might impel him to the crime. It is for this reason, that I insist so strenuously on the instruction of the lower classes, who have far stronger excitements to vice and crime, than others.* How often have we had occasion to observe, that those persons are the really guilty, who suffer the mind of the people to stagnate and corrupt in ignorance and superstition. The following account presents many points of resemblance between Voirin and the author of a crime, committed at Albi, in 1808.

“The court of criminal justice of Tarn,” says M. Coutele,† “condemned to death, Jan. 21, 1809, a man who was convicted of having killed his brother-in-law. The jury and the spectators were struck with the unwavering ferocity, manifested by this person during the trial. He had the most sinister aspect, and such was the expression of his sombre and savage look, and haggard eyes, that none could see him without a shudder. The judges were convinced they had never seen the figure of a man-tiger drawn in such strong relief.

“The court had followed the traces of his crime, but

* V. Sect.

† Observations on the medical constitution of the year 1808, at Albi, part II. by M. Coutele, M. D. at Albi, 1809, p. 163 and 165.

no evidence had fixed it upon him as the author, because no witness had seen it. He confessed it himself voluntarily, and of his own accord, and with the utmost sang-froid, detailed every circumstance that attended it. The dreadful story made the large audience that listened to it, shudder with very horror. After confessing all with calmness, and with an air of familiarity with the subject, he declared *that he had been urged on by an impulse to this murder*, adding, *that he could not resist the temptation of killing and shedding blood*. He seemed to be aware, that, if left to himself, his existence would be a calamity to his species.

"In the special examinations, he had already made known a series of crimes, previously committed on his nearest relations. Among others, he made several attempts to poison his mother and step-father.

"The announcement of his sentence did not intimidate him. He heard it without fear or remorse; he declined to appeal, and requested them to hasten his death. He refused all spiritual aid, appeared to be unmoved by the thought of his near destruction, and mounted the scaffold without emotion.

"The great importance," continues Dr. Coulele, from whom I have taken this account, "of ascertaining whether the conformation of the skull in this subject corresponded with his well-known character and the expression of his countenance, induced me not to neglect examining it.

"Decending into the pit, shortly after the execution, I hesitated for a moment to take up the head, which had been separated from the trunk. The eyes glared, and the features retained, to the full, their fierce and threatening expression. I soon found, by the touch, a prominence in the temporal region, just over the ear; having exposed the squamous portion of the bone, I found, on its posterior third, a round bump, from three to four millimetres (0.11811 to .15748 of an inch) high in the centre, and a dozen centimetres (4.7244 of an inch) in circumference at the base. It bore some

resemblance to those little balls of ivory or stone, that children play with. The two prominences were perfectly symmetrical."

The whole region over the ears is more remarkable than in any other cranium. In that of Madeline Albert, of Moulines, it is so developed, that, without exaggeration, it might be thought to have been blown up. (Pl. lxviii. fig. 1.) This monster killed her mother, brothers and sisters with a hatchet. During the preparation for her trial, she spoke continually and with pleasure, of her atrocious deed. For the convenience of the artist in drawing her figure, she willingly placed herself in the attitude she took, when meditating the crime, (Pl. lxix. fig. 1.) Excepting the organ of murder, (vi.) the whole head is but moderately developed. The forehead is low and narrow. From all appearances, this girl had none of the resources furnished by education, for combating the pernicious impulses, to which her internal organization made her a prey.

Since the publication of my large work, I have obtained six skulls and casts of murderers, all of which show the organ much developed, viz.; the cast of Merlin, who murdered his father for refusing him money; that of Boutiller, who murdered his mother for the purpose of robbing her; that of Foulard, who murdered his mistress, in a fit of intoxication, to get possession of her jewels; and that of Guichat, an assassin and robber. These four murderers had, besides the organ of the propensity to murder, so large a development of the organ of the sentiment of property, that there was also a propensity to steal. The next, the skull of a hussar, and pump-maker by trade, who killed his mistress for her infidelities, presents the organ of the propensity to murder only, largely developed.

A society of physicians* charged M. Trollet, physi-

* I beg these gentlemen to receive my warmest thanks. If such zeal were every where manifested, what progress would not the science make in a few years!

cian of the Hotel-Dieu, to send me a cast of a remarkable criminal, executed at Lyons. His name was Lelievre, and he styled himself Chevalier. He was accused of robbing the bank of France, where he held some office, of sixty thousand francs, (about twelve thousand dollars.) He had poisoned his mistress, and his first three wives, killed two of his children, and robbed another. He was for seven or eight years, employed in the prefecture of Rhone, in quality of chief of the bureau. The cast shows an unfortunate combination of several organs largely developed, viz. those of the propensity to murder, to cunning, and to theft. The organs of calculation, wit, mimicry, &c. are large, with a small development of the organ of circumspection; consequently, we have heedlessness, perverse inclinations, and a temper of mind to be extremely pleased with their indulgence!!

Dr. Spurzheim saw, in the Hunterian Museum, two Carib skulls, which swelled out greatly over the ears. See, also, Pl. lxxiv. fig. 2. vi. the skull of an adult Carib.

I have constantly observed, that bloody spectacles have a peculiar charm to those women in whom this organ is large. They are fond of the chase; they would like to be men, to follow the profession of arms; they bestow their affections on military men exclusively; battles are never murderous enough for their taste; and, in reading the newspapers, their curiosity is excited only by the accounts of murders and executions. Like Aurelian and Louis XI., they are fond of attending executions, and, if decency permitted, they would adopt the example of Catherine de Medicis, and be pleased to make their children spectators of such revolting spectacles.

In the engraving of the Marquis of Toirus, who excelled in the chase, and whose principal passion was that of arms, I observe this organization expressed in a very high degree.

I have elsewhere said, that painters, draftsmen, engravers, and sculptors, sacrifice truth to erroneous

notions of beauty, and endeavor to render less striking those uncommon forms, which they sometimes meet with in their models. Still, there occur, from time to time, forms so striking, that the likeness absolutely depends on it, and then the artist is obliged, in spite of himself, to remain true to nature. In this way we obtain some faithful portraits of remarkable persons. The busts and portraits of Caligula, Nero, Sylla, Septimius Severus, the most cruel and warlike of the Roman emperors; Charles IX., Richard Coeur-de-Lion, Philip II. of Spain, the sanguinary and cruel Mary of England, Catherine de Medicis, Ravallac, the famous corsair Storzenbecker, the fierce and sanguinary Knipperdolling, (pl. lxi. fig. 2.) and bishop Bonner, who, in the space of four years, sent more than two hundred victims to the flames, all bear the outward mark of a cruel and bloody character.

The action of this organ, when very active, must be necessarily modified by the co-existence of one or many other faculties, equally very active. Combined with love of fighting, it constitutes the warrior, brave to temerity, as well as the invincible brigand. Combined with a high degree of lasciviousness, it constitutes those debauchees, who, like Nero, the author of Justine, and Count Charrolois, stained their debaucheries with blood, and sacrificed the same victims, both to their lust and their blood-thirsty temper.

In treating of the dispositions to theft, pride, devotion, &c., I shall show how they modify the propensity to murder, when they accompany it.

From what has been said, my readers will comprehend, why even Montaigne, who had probably reflected on such facts, could not help expressing the following sentiments:—"I could not be convinced, before seeing it, that there are spirits so brutal as to murder for the single pleasure of the thing; who would hack and hew the limbs of a fellow-being, rack their ingenuity to invent new means of torture, and enjoy the charming sight of the writhings, the dreadful cries and groans of

a man dying in agony,—the utmost refinement of cruelty. *Ut homo, hominem, non iratus, non timens, tantum spectaturus occidat.* Seneca, epist. 90.—2.

“I seldom take a wild animal alive, which I do not restore to liberty. Pythagoras bought them of the fishermen and fowlers for the same purpose. The barbarous treatment of brutes, indicates a natural propensity to cruelty. When the Romans had become accustomed to the shows of the murders of wild beasts, they they were not long in getting to those of men and gladiators. Nature, I fear, has implanted in man some instinct of inhumanity.” *

It is proved, therefore, by the natural history of man and brutes—of man, in disease as well as health—that the murderous, or sanguinary instinct, is an innate primitive power, and, consequently, a fundamental quality, resulting from a particular cerebral part, placed just above the ears, in the majority of the carnivorous and omnivorous animals.

VI. *Cunning, Trick, Tact, (List, Schlaueheit, Kluheit.)*

History.

In early youth, I was struck with the character and form of the head of one of my companions, who, with amiable dispositions and good abilities, was distinguished for cunning and trickery. His head was very large at the temples, and naturally inclined forwards. Although a faithful friend, he felt an extraordinary pleasure in employing every possible device to make game of his school-fellows, and mystify them. His natural language was precisely the expression of cunning, such as I have often observed in dogs and cats, when playing together, they wished to give each other the slip. Subsequently,

* Montaigne, Essais liv. 2. chap. 2.

I had another companion, who, at first sight, was candor personified. No one had ever mistrusted him, but his gait and manner were those of a cat, watching a mouse. He proved false and perfidious, and shamefully deceived his young school-fellows, his tutors and parents. He carried his head as before mentioned; his figure was handsome, and his head exceedingly large at the temples. One of my patients, who died of phthisis, generally passed for a very honest man; after his death, I was struck with the size of his head in the temporal region; and shortly after, I learned that he had cheated his acquaintances, and even his mother, out of considerable sums. At Vienna, I was often in company with a physician of uncommon attainments, whose character for cheating, rendered him universally despised. Under pretence of dealing in objects of art, and of lending on pledges, he fleeced all who put any confidence in him. He carried his trickery and cheating so far, that the government warned the public, through the newspapers, to beware of him; for he had practised his arts with so much dexterity, that he never could be legally condemned. He frequently told me, with an air of sincerity, that he knew no greater pleasure, no more exquisite enjoyment, than that of duping people, and especially those who distrusted him most. As this physician's head was also very large at the temples, I was naturally impressed with the idea, that the essential quality of this character, cunning, is a primitive one, and is manifested by a particular organ of the brain.

Natural History of cunning in man and brutes.

The lower animals make use of innumerable arts for procuring food, and escaping from their enemies. If we bear in mind, that these means are always really the best, the most appropriate to the end in view, and that the faculties of the creatures that employ them are, in every other respect, quite limited, we shall be obliged to

admit in them, a peculiar power, or, if the expression be preferred, a peculiar genius, by which they are inspired. All are acquainted with the stratagems of the cat family, of the marten, of the pole-cat, of the fox, and the diving-birds. Who would believe that the stag and hare often deceive the most experienced hunter and the best trained dogs? They make a thousand turns, leap over bushes and walls, return upon the old track, save themselves, sometimes in the open plain, and sometimes in the coppices, according as they are pursued by greyhounds or bloodhounds; start up other deer and other hares; increase their speed, or retard it when the danger or the need of husbanding their strength requires it. Who has not observed the art, with which a squirrel or wood-pecker turns around a tree, or a marten stretches himself out on a limb, and remains motionless, to prevent his being seen by the hunter?

The fox and wolf, unless pressed by hunger, will rarely levy contributions on their neighborhood; they never forget that they must beware of snares. When warned by the wind that their prey is near, they steal slowly along, but, when at a distance, they fly to approach it. Often, when hunting in packs, will they carefully reconnoitre the course the roe-buck, stag, or hare has taken, and then divide into parties, the more easily to put their victim at bay. In the circus at Vienna, they very frequently put several ducks into a reservoir of water, and then let loose upon them some bears. The moment a bear entered the water, nothing more was to be seen of the ducks. When, after many efforts, a bear succeeded at last in getting a duck, the latter would feign death, so as even to appear stiff and cold; but hardly had the bear laid him on the ground, when the duck fled swiftly back to the water. I must pause, for I should never finish, were I to relate a few only of the facts with which I am acquainted, respecting the artifices of animals.

In man, cunning is displayed in various ways, from his very infancy. There are children, for example,

who, without being indebted to education for the habit, lie continually, and without necessity, alter every fact, and fabricate false reports, even when it would be easier for them to tell the truth.

Who shall depict all the artifices, hypocrisies, cheating and perjury of rich and of poor, of strong and weak, of citizen and warrior, priest and parishioner ! “ Artful and hypocritical man constantly endeavors to control the expression of his countenance and motions ; he is impenetrable, he dissembles bad offices, smiles upon his enemies, checks his temper, disguises his passions, belies his character, speaks and acts contrary to his sentiments ; all these are but refinements of the single vice, falsehood.”*

Every body knows, that there is a class of people that take a pleasure in artifice, dissimulation, perfidy, falsehood, circumvention, duplicity, and lying ; and that there are others, who act with rectitude and speak with frankness. All that I can say on this subject particularly, is, that neither the character of the disguised, artful, intriguing and perfidious man, nor that of the frank and upright man, is the result of their own will alone ; but that these different kinds of character result from a particular organization.

Seat of the organ of Cunning, and the character by which it is manifested externally.

In the brain, this organ is situated above and a little in front of the organ of the carnivorous instinct, (ix. pl. viii. and ix. pl. xi.) It forms on the head and cranium a prominence swelling out and extending longitudinally from behind, forwards, and terminating above an inch from the upper superciliary arch, (ix. pl. xxviii.) When the organ of the carnivorous instinct is very much de-

* The Courtier of la Bruyere.

veloped, we may easily confound it with that of cunning, unless we bear in mind that the latter is placed higher up, and further forwards on the temples; and that, instead of forming the segment of a sphere, it extends longitudinally. When both are large, the whole side of the head and skull forms one large, full prominence, as in vi. ix. pl. xxvii.

This organ requires particular study in each species. In the most common species of ape, for example, it commences above the origin of the zygomatic arch, and extends forwards to nearly the middle of this bone. Its situation is the same, in the tiger, cat, and fox. Generally speaking, without excepting the frugivora and the birds who are remarkable for their cunning disposition, the region above mentioned is very prominent in the lower animals. Observe persons, whose head is very prominent on the sides and flattened on the top, and you will always find them false, artful, perfidious, venal, vacillating and hypocritical. Such persons overwhelm you with politeness, and deafen you with flattery; they make you feel at home with them, that they may unsuspectedly lay their plots against you, and the more easily work your ruin.

When a considerable development of this organ is combined with a large development of the higher qualities or faculties, its activity is capable of receiving a legitimate and useful direction. Persons thus endowed have considerable tact, (*savoir faire*,) they are very well suited to perform secret missions; and, naturally disposed to intrigue themselves, they have a wonderful facility in scenting out, and penetrating into the intrigues and cabals of those with whom they are negotiating conflicting interests; consequently, they are capital people to oppose to those of a similar character. At Paris, I was shown a personage of this kind, M. de S——, and at first sight, I divined his character in respect to this quality. Being told of the opinion I had formed concerning him, he was quite enchanted, and commenced a conversation with me, in which he detailed at

length the means he was accustomed to use, in accomplishing the objects of the various missions with which he had been entrusted. He was one of the most skilful diplomatists the government had ever employed.

I once dined with a family, the mother of which, one of the sons and one of the daughters, presented this same organization in a very high degree, while the utmost frankness and sincerity were displayed. Spurzheim and myself determined to keep these three individuals in view, and during the nine years our acquaintance with them continued, we found that our first opinion was but too often confirmed. The same thing occurred, relative to a young woman who seemed innocence itself. Again, no one ever seemed so glad to receive us; no one, with a more yielding, sweet and winning air, overwhelmed us with so much politeness and flattery as a certain professor; but his organization warned us to be on our guard. It was this same very polite professor, who has often undertaken to decry our labors by metaphysical and philosophical declamations, though always prevented from entering thoroughly into the subject, by the weakness of his means and the evidence of my doctrines.

In houses of correction, we have found this quite large, in those who had committed the offences of which they were guilty, under circumstances of considerable cunning and perfidy. Never, for example, within our experience, did a robber, endowed with an ordinary development of the organ of cunning, commit an ordinary theft; for, in fact, he would steal only when the larceny required consummate address. A robber of this class is delighted and amused, with detailing all the means he has used in arriving at his ends, and omits none of the comical circumstances of the adventure. When the organ of cunning predominates over that of theft, the thief is not strongly disinclined to restore the stolen object, provided always he has an opportunity of proving his skill in committing the theft.

In hospitals for the insane, we have met with this

organization, in patients who were addicted to cheating tricks during the paroxysm, but especially in those who were impelled to them by an irresistible impulse: examples of this nature are not rare. Pinel relates several, and he proves that this disposition depends on a particular organ.

The writer, with this organ large, will choose the department of romance. The poet, will have great facility in skilfully combining his fictitious or real events, in such a manner as to work up his story ingeniously, and bring it to an unexpected denouement.

In war, this organ inspires the general with stratagems, by which he surprises the enemy, conceals his force, masks his designs, and makes feigned marches and false attacks. As this organ always supposes an intention, a plan,—it also plays a peculiar part in society. It sees a settled design in the most innocent words and actions; a forced construction is put upon every thing, and they would often make us responsible for what we never even thought of. The portraits of Caracalla, of Catherine de Medicis, of Claudine Alexandrine Guerin, and of Tencin, all of whom were fond of intrigue, present us with examples of this organization. The development of this organ, like that of all the rest, is capable of being favored by the influence of climate, and perhaps, also, by customary occupations. Artifice and perjury appear to be characteristic of certain nations, (*græca fides*,) while others believe themselves irrevocably bound, when they have once shaken hands upon a bargain.

Again; I remark, that we must be careful not to confound this character with that of certain persons, who, from a want of good sense, never conduct with straightforward frankness, and are constantly twisting one way and another, and who, therefore, get the reputation of being intriguers. But they are not actuated by a spirit of intrigue; for the excuses they offer for their conduct, still more than the action itself, show a silliness of character.

What is the primitive faculty of this organ? "When," says Spurzheim, "I consider the mental operations of man and brutes that possess this organ, particularly, when I observe the natural language of cunning creatures, it appears to me that the primitive faculty is the instinct to conceal. Cunning animals conceal with adroitness. The cat pretends to be asleep, and the moment the cook's back is turned, he runs away with the meat. Mice he watches for, without the slightest motion of body. The dog, to keep a bone to himself, hides it in the ground. Cunning men, in a thousand ways, betray the instinct to conceal; they often will utter a falsehood, to get at the truth; exaggerate the good, to learn the evil; and attribute suppositious virtues to those whose faults they are anxious to know. The primitive faculty, therefore, is always the same, whether the concealment refers to intentions, ideas, persons, or things. I propose to call this propensity, *secretiveness*."

In all these actions of men and brutes, I see only cunning, dissimulation. Why crowd the language with terms, the meaning of which nobody can divine?

"Cunning," says Demangeon, "appears to me to be a conspiracy of all the intellectual organs against the effects of force, malevolence, and injustice. Hence force and power, as such, disdain its use, and have recourse to it, only when incompetent to undertakings of doubtful success, or attended with danger. Cunning consists in eluding injurious measures, and preparing successful ones, the knowledge of which, by Gall and Spurzheim, is attributed to many faculties. There seems to me a contradiction, in supposing that this is able to elude and to obtain, what it is not able to know. Our authors place the organ of cunning, as well as the organs of theft and circumspection, in a lateral swelling of the brain. But this swelling indicates only a voluminous brain, and, consequently, faculties more numerous and more largely developed, which ought to be accompanied with more intellectual resources, and, consequently, a greater aptitude to foresee and obtain success of every kind.

This shows how easily we may be imposed upon respecting the situation of the organs, for want of precise ideas relative to the faculties to be attributed to them. I, therefore, had some reason for saying, that, to determine the faculties, we must know exactly their sphere of activity ; we must have determined them rigorously. Here, then, is the mountain, at whose foot our authors stand ; and we would take it kindly of them, if they would turn about, and show us some way of climbing over it.

“ But this propensity encroaches on the sphere of circumspection, and is therefore supererogatory ; or, it leads to stratagems, and to all kinds of surprise and deception, that the organs of courage, of destruction, of the generative power, of theft, love of offspring, &c., can suggest ; and again it is supererogatory. I conclude from these reflections, that neither cunning, nor the propensity to conceal, can constitute a special faculty, and are not to be considered as general attributes, or acts of free-will.”

In each objection, the reasoning of Demangeon takes, and is obliged to take, a different turn, by which the previous objections are subverted. Just now Demangeon reduced all the instincts, all the faculties, the generative instinct, philoprogenitiveness, attachment, courage, carnivorous instinct, circumspection, theft, &c., to a simple conservative instinct ; and, as all the functions of the organism, even those of the five senses, are designed for our self-preservation, ought not the conservative instinct to be considered the immediate source of all the other instincts and faculties ? In his objections to cunning, Demangeon, in place of all the faculties and propensities, would substitute free-will. It is this free-will, which, in the cuckoo, refuses to take care of its offspring ; which, in the squirrel, constructs a nest ; which, in the stork, migrates ; which, in the nightingale, sings ; which, in the ferret, sucks the blood of the rabbit, &c. Give the name of *mind*, or *soul*, to Demangeon's free-will, and we shall again be able to dispense with the brains and its different organs altogether. We

have no fear of being charged with inconsistency in relying upon a more voluminous brain, to explain the phenomena of a more complex, and wider intelligence ; and, if this intelligence is manifested by instincts, propensities, and faculties altogether different, according as the brain is more voluminous in the inferior-posterior regions, or the superior-anterior, or lateral regions, we have only to say, that it is the free-will, which, independently of all these conditions, impels to gratification, to acts of cunning, to murder and robbery, or to religious thoughts, and philosophical conceptions. Cunning appears to Demangeon, to be a conspiracy of all the intellectual organs against the effects of force, malevolence, and injustice. This high moral conception, so admirably fitted to cloak the little intrigues of coquetish women, is perfectly established by the conspiracy of so many intellectual faculties in certain idiots and maniacs, who, entirely destitute of common sense, in all other respects, are inexhaustible in the arts of cheating and cunning. This conspiracy of the intellectual organs is also very striking in the artifices of the fox, the diving birds, the sparrow, and particularly the hare, which so often deceives the best trained dogs, and all the intellectual organs of the oldest hunters. Lo, the sublime achievements of reason, when it exercises its powers at the expense of observation !

VII. Sentiment of Property ; Instinct of Providing ; Covetousness ; Propensity to Theft, (Eigenthums-sinn, Hang zu stehlen.)

History.

The errand-boys, and others of that class of people, whom I used to assemble in my house in great numbers, would frequently charge each other with petty larcenies, or, as they called them, *chiperies*, and took great pleasure in pointing out those who excelled in these prac-

tices; while the *chipeurs* themselves would come forward, proud of their superior address. What particularly struck me was, that some of these people showed the utmost abhorrence of thieving, and preferred starving to accepting any part of the bread and fruits their companions had stolen; while the *chipeurs* would ridicule such conduct and think it very silly.

When I could assemble a considerable number, I would often divide them into three classes. The first would include the *chipeurs*; the second, those who had an abhorrence of theft; and the third, those who regard it with indifference. On examining their heads, I was astonished to find that the most inveterate *chipeurs* had a long prominence, extending from the organ of cunning, almost as far as the external angle of the superciliary ridge; and that this region was *flat* in all those who showed a horror of theft; while, in those who were indifferent about it, the part was sometimes more and sometimes less developed, but never so much as in the professed thieves.

These observations were not long in impressing me with the idea, that the propensity to steal might also be the result of organization. All the subjects of my observations were mere children of nature, left exclusively to themselves. None had received the least education, and their conduct, therefore, might well be regarded as the result of organization. Those who detested stealing, were often the very ones whose education had been completely neglected. The wants and circumstances of all of them were nearly the same, and the examples set before them were the same. To what cause, then, could the difference be attributed?

At this time I was physician to the Deaf and Dumb Institution, where pupils were received, from six to fourteen years of age, without any preliminary education. M. May, a distinguished physiologist, then director of the establishment; M. Venus, the teacher; and myself, had it in our power to make the most exact observations

on the primitive moral condition of these children. Some of them were remarkable for a decided propensity for stealing ; while others did not show the least inclination to it. The most of those who had stolen at first, were corrected of the vice in six weeks ; while there were others, with whom we had more trouble, and some were quite incorrigible. On one of them, were several times inflicted the severest chastisements, and he was put into the house of correction ; but it was all in vain. As he felt incapable of resisting temptation, he wished to learn the trade of a *tailor* ; because, as he said, he might then indulge his inclination with impunity.

The more active and incorrigible the propensity to theft in these young people, the more indubitably was my first observation confirmed. Here, too, education could not come into the account ; for, from the moment they came into the institution, their wants, their instruction, and the examples before them, were all the same. I was therefore obliged to conclude, that the propensity to steal is not an artificial product, but *is natural* to some people, and inherent in their organization. I took casts of the heads of all the confirmed thieves, to increase my means of comparison.

At this time, there was in the house of correction, a lad, fifteen years old, who had been a thief from his infancy, notwithstanding all the punishment he had received, and was finally condemned to confinement for life, as absolutely incorrigible. He is the same mentioned in vol. i. sect. v. His head was small and unsymmetrical, (pl. xxvi ;) and the forehead very retreating. His intellectual powers were so far below mediocrity, that I was astonished the incorrigible nature of his thieving propensity was not always attributed to this circumstance. In him, the region just mentioned, is very prominent, and the corresponding cerebral part was the only one very active ; and as its activity was not balanced by the action of other parts, and the subject was incapable of higher motives, it became predom-

inant. This case was conclusive proof to me, that the propensity to theft, is produced by a particular cerebral part, or has its proper organ.

Two citizens of Vienna, who had always lived irreproachable lives, became insane, and from that time they were distinguished in the hospital for an extraordinary propensity to steal. They wandered over the hospital, from morning till night, picking up whatever they could lay their hands on,—straw, rags, clothes, wood, &c.,—which they carefully concealed in the apartment which they inhabited in common; and though lodged in the same chamber, they stole from each other. In both, the cerebral part in question, was very much developed, and the corresponding region of the skull very prominent. The case of these two persons proves, that a man, whose intellect is not quite too feeble, may, in health, overcome the unfortunate impulses of certain organs. It proves, also, that the propensity to steal, proceeds from a particular cerebral part; for a quality which, independently of all others, may be carried to such a pitch of activity, as to deprive the individual of all control over the actions that result from it, must be referred to a cerebral part, independent of all the rest.

These facts were enough to induce me to pursue the natural history of the propensity to theft. My readers being probably acquainted with all that remains to be said on this subject, it will not be difficult to convince them, that the propensity to theft is innate, and has its proper organ.

Natural history of the propensity to steal.

The following cases, from the fifth section of the first volume, page 256, conclusively prove, that the propensity to steal is not the result of moral depravement, nor of a defective education, but is an inherent quality in human nature.

Victor Amadeus I., King of Sardinia, was in the con-

stant habit of stealing trifles. Saurin, pastor at Geneva, though possessing the strongest principles of reason and religion, frequently yielded to the propensity to steal. Another individual was, from early youth, a victim to this inclination. He entered the military service, on purpose that he might be restrained by the severity of the discipline; but having continued his practices, he was on the point of being condemned to be hanged. Ever seeking to combat his ruling passion, he studied theology and became a capuchin. But his propensity followed him even to the cloister. Here, however, as he found only trifles to tempt him, he indulged himself in his strange fancy with less scruple. He seized scissors, candlesticks, snuffers, cups, goblets, and conveyed them to his cell. An agent of the government at Vienna had the singular mania for stealing nothing but kitchen utensils. He hired two rooms as a place of deposit; he did not sell, and made no use of them. The wife of the famous physician Gaubius, had such a propensity to pilfer, that when she made a purchase, she always sought to take something. Countesses M., at Wesel, and P., at Frankfort, also had this propensity. Madame de W. had been educated with peculiar care. Her wit and talents secured her a distinguished place in society. But neither her education nor her fortune saved her from the most decided propensity to theft. Lavater* speaks of a physician, who never left the room of his patients without robbing them of something, and who never thought of the matter afterward. In the evening his wife used to examine his pockets; she there found keys, scissors, thimbles, knives, spoons, buckles, cases, and sent them to their respective owners. Moritz, in his experimental treatise on the soul, relates with the greatest minuteness the history of a robber, who had the propensity to theft in such a degree, that, being "in articulo mortis," at the point of death, he stole the snuff-box of

* Physiognomie, Edit. de la Haye, t. ii. p. 169.

his confessor. Doctor Bernard, physician of his majesty the king of Bavaria, speaks of an Alsatian of his acquaintance, who was always committing thefts, though he had every thing in abundance, and was not avaricious. He had been educated with care, and his vicious propensity had repeatedly exposed him to punishment. His father had him enlisted as a soldier, but even this measure failed to correct him. He committed some considerable thefts, and was condemned to be hanged. The son of a distinguished literary man offers us a similar example. He was distinguished among all his comrades for his talents ; but, from his early infancy, he robbed his parents, sister, domestics, comrades, and professors. He stole the most valuable books from his father's library. Every kind of means was tried to correct him : he was sent into the service, and underwent several times the most rigorous punishments : but all was useless. The conduct of this unhappy young man was regular in all other respects ; he did not justify his thefts ; but, if they addressed to him on this subject the most earnest and the most amicable representations, he remained indifferent ; he seemed not to understand them. The almoner of a regiment of Prussian cuirassiers, a man otherwise well educated and endowed with moral qualities, had so decided a propensity to theft, that on the parade he frequently robbed the officers of their handkerchiefs. His general esteemed him highly ; but as soon as he appeared, every thing was shut up with the greatest care ; for he had often carried away handkerchiefs, shirts, and even stockings belonging to the women. For the rest, when he was asked for what he had taken, he always returned it cheerfully. M. Kneisler, director of the prison at Prague, once spoke to us of the wife of a rich shopkeeper, who continually robbed her husband in the most ingenious manner. It was found necessary to confine her in gaol ; but she had no sooner escaped than she robbed again, and was shut up for the second time. Being set at liberty, new thefts caused her to be condemned to a third detention longer

than the preceding. She even robbed in the prison. She had contrived, with great skill, an opening in a stove which warmed the room, where the money-box of the establishment was placed. The repeated depredations she committed on it were observed. They attached bells to the doors and windows to discover her, but in vain ; at length, by the discharge of pistols which went off the moment she touched the box, she was so much terrified that she had not time to escape by the stove. In a prison at Copenhagen, we have seen an incorrigible robber, who sometimes distributed his gains to the poor. In another place, a robber shut up for the seventh time, assured us with sorrow, that it did not seem possible to him to conduct otherwise. He eagerly begged to be retained in prison, and to be furnished with the means of gaining his living.

To these facts, I would also add some others. At Munster, a man was condemned to imprisonment for eight years, on account of some robberies. He was no sooner liberated, than he committed fresh depredations, and was thereupon imprisoned for life. Sixteen years afterwards, he revealed a conspiracy which had been formed among the criminals, and it was proposed to reward him by setting him free. The judge objected to this, that it would be dangerous to do so ; as the man himself had previously assured him, that his thievish propensity was so rooted in his constitution, that he could not by any possibility resist it. About a year after, he escaped from prison, betook himself to his old practices, and was again arrested ; shortly after which, he hanged himself. " During the ten years that I had known this man in prison," said Wernsking, from whom we had these facts, " he was remarkable for activity, and devotion during divine service ; but I learned, after his death, that he was constantly committing petty larcenies, even in the prison itself."

In the most of these cases, the persons were mastered by the unhappy propensity to theft, from no defect of education, or weakness of intellect, nor even necessity. Nei-

ther have I quoted these cases, because they are rare ; for the like may be daily seen, though they are always wrongly considered, because people start from the idea that our actions are solely determined by our will. What can be more important to the moralist, legislator, and judge, than a knowledge of the true sources of criminal actions ?

Undoubtedly, defect of education, superstition, bad examples, &c., are just so much food for vicious propensities. We have always observed, as has been already mentioned, that crimes of every description are frequent in a country, in proportion to the neglect of education and instruction. Still these unfavorable circumstances would not produce the propensity to theft, if it were not inherent in our nature.

Among all nations, and at all times, theft has held the most conspicuous place among offences. Few men can lay their hand on their heart and say, "I never stole," especially if they go back to their childhood. In the majority of men, the propensity to theft must be incessantly combated by powerful motives, penal enactments, and religious sanctions. What variety in the forms of theft ! How long the chain, from the most petty larceny to rapine and piracy !

In war and litigation, in the administration of the property of orphans and minors, in commercial transactions, in almost every mode of gaining a living, even in many establishments created or protected by the government, such as lotteries, games of chance or skill, &c., sponging, cheating, theft, piracy, and pillage, may be seen in every direction. The most ardent panegyrist of human nature has never succeeded in freeing it from the stigma of an almost universal propensity to fraud.

The whole difference consists in the amount. In one, the propensity is held in check by a happy organization ; in another, by the influence of education, the force of habit or the fear of punishment ; in a third, the vicious disposition is produced by an organ so powerful, that the same motives, which would have made any body

else an honest man, have no influence on him. It is the *power* of this propensity to steal, towards which the attention of the legislator and the judge should be directed. The theft, or value of the object stolen, are accessory circumstances ; it is the gradation of the propensity, the useless attempts to reform, the relapses, the indifference of the criminal, the absolute want of repentance, the effrontery and insolence with which robbers boast of their crimes,—these are what should require the attention of the observer.

I find nothing better suited to the nature of man, than the institutions of certain states. For the first offence, the criminal is removed, not to prison, but to an establishment, whose object is to reform him ; and when he has been prepared, by moral and religious instruction, to lead a regular life, and can provide for himself, he is restored to society. At each relapse, however slight, the penalty is increased, and it is not, till after numerous relapses prove that he is incorrigible, that he is excluded forever from society. Before pronouncing this final sentence, every chastisement is avoided, that would prevent the individual from re-appearing among his fellow-men, in case he should alter his conduct. Exposure in iron collars, branding, advertisements in public prints, &c., we look upon as directly contrary to the end proposed, anti-philanthropic, and pernicious. When will wise legislation, like that just mentioned, be generally adopted ? Alas ! how far are we yet from it in a country, where, almost daily, they prevent the penitent offender, by infamous punishments, from returning to the paths of honor ! He is forced, we may say, to support his existence by banding with criminals, whom society has rejected from its bosom. All those robber-bands, composed of men marked with the seal of infamy, that pillage on the highways, and even in towns, are a striking proof of this sad truth. We are forced to acknowledge, that the means at present employed for reforming offenders are insufficient. In the *Annales politiques, morales et litteraires*, 1818, Oct. 24, it is stated, that, “ the case

that occupied the Court of Assizes to-day, most clearly and strikingly proves, that the majority of liberated criminals finally die impenitent. Whether they are debased by their residence in prison, or are naturally inclined to crime, they nearly all re-appear before the Court of Assizes, stained with new crimes."

Natural history of the propensity to Theft in disease, with remarkable weakness of understanding.

Here again I quote some cases, already mentioned in the fifth section of the first volume.

Among the young boys who were brought to us in one of the prisons of Berlin, (Stadt-Vogtey,) there was one who particularly attracted our attention. We advised that he should not be set at liberty, because he would not be restrained from a continuance of his robberies. We added, that the best thing which could be done, was to keep him always in a place of security. We communicated our reasons to those who accompanied us. They consulted the register, and found, to their great surprise, that this young boy had, from his earliest infancy, shown the most obstinate propensity to theft. Our adversaries availed themselves of this opportunity, to place in the strongest light what they were pleased to find frightful and dangerous in my doctrine. "To condemn," said they, "a young boy to perpetual imprisonment, because he has committed a theft, what can be more cruel or more revolting to humanity?"

What reason had we, then, to give this advice? I have already made evident, that we ought to consider man in two points of view; first, as having qualities common with animals; that is to say, those of an inferior order; then, as being endowed with the character of humanity, or with qualities of a superior order. I have also shown that man, in virtue of his superior qualities, is capable of subduing and directing his propensities of an inferior order. But, if the qualities of a

superior order are controlled in an extraordinary manner, to such a degree that their free action is prevented, while those of the inferior order, on the contrary, are active, then the animal part of the man predominates exclusively, and the flesh, or the brutal desires, hold in subjection the spirit, or the dispositions of the superior qualities, which are hardly developed. With such an organization for the functions of the soul, which belong to a superior order, the same happens which takes place in regard to each organ whose development is defective; that is, there results a relative imbecility, and, in consequence, the incapability of acting morally; while the propensities of an inferior order act with uncontrolled energy. Such an individual finds himself under the absolute necessity of acting solely from the impulse of the passion which governs him, and his organization often places him in a worse state for self-government than that of a well-organized animal. This imbecility does not always exclude other very active properties which are common to animals, such as that of cunning; so that this same individual, even while abandoning himself to a guilty and irresistible inclination, seems, in this respect, to act with reflection and deliberation. It is thus, that the most stupid idiots often find means the most ingenious to satisfy their brutal wantonness, or their mischievous desires.

Such was the condition of the young robber of whom I have just spoken. The superior organs had but a defective development; that organ, on the contrary, whose too great activity leads to theft, had acquired a great degree of development and energy, and this mischievous quality was likewise seconded by the activity of cunning. This man was short, and thick set; his forehead was very low, depressed back immediately above the eye-brows, very sloping laterally above the eyes, but broad and saliant towards the temples. His physiognomy announced no attention for reasonable subjects; nothing could be there discovered but cunning and malice. Was it, then, very difficult to conclude from

the organization of this simpleton, that he must be incorrigible ?

In the history of the propensity to theft, I mentioned the case of a young man, fifteen years old, half imbecile and incorrigible, who died in the house of correction, at Vienna.

“We saw in the prison of Berne, a boy of twelve years, ill-organized and rickety, who could never prevent himself from stealing ; with his own pockets full of bread, he still took that of others. At Haina, the overseers gave us a long account of an obstinate robber, named Fesselmayer, whom no corporal punishment could correct. In the prison he stole every thing he saw ; and they had put on his arm a card which served as a mark of disgrace, warning others not to trust him. Before seeing him, we anticipated what his organization must be, and our expectation was confirmed at the very first glance. He appeared about sixteen years of age, though in fact he was twenty-six. His head was round, and about the size of a child of one year. This individual was also deaf and dumb, which often happens in cases of mental imbecility.”

The following case was communicated to me, by M. Esquirol. “A knight of Malta, the son of an officer, and carefully educated, quitted the army, like all the gentlemen, at the beginning of the French revolution. Having retired to the country, he gave himself up to excessive indulgence in the pleasures of love. When thirty-five years old, his parents and friends perceived that his intellectual powers were beginning to be enfeebled ; that he was not so cheerful ; that he often lost his memory ; and that the object of his passion was a source of extreme chagrin. He became restless, quarrelsome, impudent, insulting men and women, and finally a thief. The propensity to steal was so strong, that, when dining at inns, he would pocket his plate, &c., and his conduct was no different when in the houses of his friends or strangers. He was obliged to travel eighty leagues to get to my establishment ; and during his journey, though accompanied by several persons, he always

found means to steal the plates at the inns; and if he could not cram them into his pockets, he would slip them into his boots. At my house, he was permitted to walk, accompanied by his servant, and in every other respect he was rational. He would go into the café, and instead of paying for what he had, would come away with the spoon and cup and saucer in his pocket. At table, I seated him near myself, and the first time he slipped his hand along to get the plate, I stopped him, and exposed him before the whole company. This lesson was sufficient; and, for more than eight days afterwards, he took care to remove his plate towards the middle of the table, either to prevent temptation, or to convince me that he was not stealing it. This disposition to theft was perfectly cured, although his head remained weak."

In the first volume, I mentioned the case of a young man, who, after a severe wound on the temple, was trepanned by Acrel. After leaving the hospital, he, contrary to his ordinary disposition, manifested an invincible propensity to steal. After committing several larcenies, he was imprisoned, and would have been punished according to law, if Acrel had not declared him insane, and attributed his unfortunate propensity to a disorder of the brain.

Natural history of the propensity to steal in insanity.

In the history of this propensity, I have already remarked, that certain maniacs are irresistibly impelled to steal. M. Pinel, also, has frequently observed, that such persons, though models of probity in their lucid intervals, could not help stealing and cheating during the paroxysms; taking every thing they could lay their hands on, entering the cells of the other inmates, and carrying off whatever they could find. I have also mentioned the cases of four women, who, ordinarily, had no inclination to steal, but who, when pregnant, were excited to it by a strong propensity.

The *Journal de Paris*, 29th March, 1816, states,

that, "An ex-commissary of police, at Toulouse, Beau-Conseil, had just been condemned to eight years' confinement and hard labor, and to the pillory, for having, while in office, stolen some pieces of plate from an inn. The accused persisted to the last in an odd kind of defence; he did not deny the crime, but attributed it to mental derangement, produced by wounds he had received at Marseilles in 1815." I am far from wishing to criticise the sentence of the court; but certainly, if the conduct of Beau-Conseil had been irreproachable before he was wounded, and he had really received wounds on the head, either his counsel was inexcusable, in not availing himself of these facts in his defence, or the court was blamable in not listening to it.

All these cases of irresistible theft, and I might relate many more, will no longer suffer the friends of truth to doubt the existence of an innate propensity to steal. The most scrupulous philosophy must be silent before facts, which all times have presented, and which are still of daily occurrence. All the reproach that has been heaped upon my doctrines, on account of the thieving propensity, have never deterred me from speaking of it publicly. Never should the naturalist so degrade himself by fear, or hypocritical compliances, as to profane the sanctuary of truth.

Thus far, I have conducted my reader by a path to which nature herself had directed me; and I presume that the facts I have related, have awakened in his mind the same painful sensation which they did in mine. In all the other qualities of man, we discover a necessary end, a beneficent institution; while here, we suddenly encounter a propensity, in direct opposition to social order.* But, I may be asked, have we not here one of those cases, where the manifestation of the quality, as

* With regard to Gall's organs of '*theft*' and '*murder*,' the views of Spurzheim are generally adopted by Phrenologists. "We may inquire," says he, "whether stealing is natural; and if so, the effect of a special propensity? To answer in the affirmative, is both irrational and dangerous: irrational, because the Creator could not bestow any

I have observed it in subjects who had it very largely developed, was only the result of its excessive activity, but is, by no means, the fundamental quality itself? Let them continue to follow me in my observations, and they will, to a certain degree, soon see that I am in accordance with nature.

On the innate sentiment of Property.

While embarrassed by the revolting idea of an innate propensity to theft, I thought of the following objection : Theft supposes property, but in nature there is no such thing as property; it is only the result of certain social conventions; therefore, there can exist no innate propensity to theft, nor organ of such propensity.

In all my public courses of lectures, I have noticed this objection, and refuted it. The opponents of organology have universally received it, as an unanswerable argument against the existence of the propensity to steal, and they have been busy in making it known. Although my reply may be found in the numerous works of my pupils; yet all my opponents have been dishonest enough to pass it over in silence, and have made the public acquainted with the objection only, for they calculated upon it for a certain victory. Let us see, therefore, if property does not really exist in nature, and whether property has produced the laws, or the laws, property.

faculty, absolutely hurtful, on man; dangerous, because it would apologize for acts, punished as crimes by law. Theft must depend upon a certain faculty, and this must be manifested by means of an organ; but theft being injurious, can only be an abuse of that faculty."

In relation to the organ of '*murder*,' Spurzheim says,—“Gall formerly called this organ that of murder, because he discovered it of large size in the heads of two murderers; but no faculty can be named from its abuse. The error Gall committed, however, was natural, for the functions of all the organs are most easily discovered in their state of extreme development, when they are very apt to produce abuses. Such, then, was the origin of this erroneous name of a faculty, whose well-regulated employment is, like that of every other, essential to life.”

[Ed.]

Property is an institution of nature in brutes.

Brutes have none of those laws and social conventions, from which property is said to result in man ; yet property does exist with them, and they have a strong sense of it, too. They have their fixed abode, and the ardor with which they defend it against all usurpation, proves well enough that they consider it their property. When there is any fear lest the soil they occupy, should prove insufficient for their support, they are careful to drive away immediately every intruder. A certain number of chamois will inhabit a certain mountain, upon which they will suffer no other whatever to come. The wolf, fox, hare, marten, &c., occupy a district of a size proportioned to the quantity of nourishment, from which they instantly drive away all intruders. They who imagine that wild beasts wander at hazard through the woods, are deceived ; for each of these animals has, in fact, a chosen abode, which it never abandons, unless forcibly driven away from it. When they are obliged to leave it, in the rutting season, or on account of inundations or the chase, they return as soon as circumstances will permit. The same pairs of storks, swallows, nightingales and redbreasts, return in the spring or in autumn, to the same country in which they had passed the season the preceding year, and establish themselves ; the storks on the same steeple, the swallows under the same roof, and the nightingales in the same bushes. If another pair of birds attempt to seize the place already appropriated, war is immediately waged against them, and the intruders are forced to depart. These facts are known to every hunter and naturalist, and my own observations have confirmed them. He who would repeat them, must mark the old and not the young ones ; for, with the lower animals, as with our own species, the parents remain in their establishment, and the young people go out.

Cows, returning from pasture, are observed, not only to enter their usual stable, but each one to take its own place and suffer no other to occupy it. We see the same thing in respect to geese and pigs. Each one of the thousand bees that come home loaded with honey, enters its own hive, and wo to the pilfering bees that undertake to lay a foreign hive under contribution ! With what courage do all creatures defend their nest, their female, their young ! What rash intrepidity will not the dog display in his master's house ! Warmed, by the sense of property, how boldly he defends his bone against a stronger dog than himself ! The stag leading along his harem, with a proud step and a firm look, seems to threaten every one that would encroach on his rights. Among the lower animals, a leader never yields the prerogatives obtained by his strength and address, and sanctioned by all the members of the republic. The dog and cat, in hiding food to be used when hunger returns ; and the squirrel, hamster and jackdaw, which collect provisions for the future, undoubtedly have the notion of property in the stores they accumulate. If they have no such notion, why this ardor in collecting provisions, this anxiety to conceal them ? Where do we see in nature such a contradiction between the instincts of animals and the end of those instincts ? The manners of brutes, therefore, prove that the sense of property is inherent in their nature.

Property is an institution of nature in man.

The opinion is constantly thrown out, even now, that the idea of property is unknown to the savage. "The idea of property," says Cuvier, "does not exist in savages, and they cannot have the same notion of theft as civilized nations have." But, let us see what travellers, such as Lafitan, Charlevoix, and the history of the Caribs teach us on this subject.

In a tribe that subsists by hunting or fishing, the

weapons, tools and skins of an individual, are his only objects of property, but still, they are always property. The nourishment of to-morrow is still living and roaming free in the forests, or concealed in the waters, and it must be taken, before it can become property ; and even then, when taken by several who have united to hunt or fish in common, it belongs to the company. It is used for present need, or set apart for the public store ; so that it is still property ; not of one, but of all who helped to acquire it.

All savage nations, which, in addition to hunting, attend to some rude kind of agriculture, as in almost every part of America, always go upon the same principle, in respect to goods and the fruits of the earth.

The women labor in common, as the men hunt in common, and after sharing the work of cultivation, they share the products of the harvest. The extent of soil that is cultivated, as well as the district they are accustomed to hunt over, is considered the property of the nation, but it is not apportioned by it to the individuals of the nation. They go in bands to prepare the soil, sow, plant and reap. The harvest is gathered into the public granary, and finally distributed to the different families for their subsistence. When the nation trades with strangers, the goods even thus obtained are put into the common stock.

In the same way that the skins and the bow belong to the individual, just so do the lodge and its utensils belong to the family ; and, if the women are charged with the domestic cares, it appears that they own the domestic property. The children are considered to belong to the mother in all cases. The males remain in the lodge where they were born, till they marry ; but on that event, they change their abode, and become an acquisition to the family into which they marry. The hunter and the warrior are considered by the mother of the family as part of her wealth, and are reserved for dangers and important actions,—a sufficient proof, certainly, that property exists as well among savages as with us.

The youngest children, who are anxious for playthings, have a notion of property. The boy must have his soldiers, and the girl, her kitchen utensils. What terrible outcries, when other children are carrying off 'my shells, my butterflies, my birds' nests!' We have, each one, his books, pens, and little garden. If we would have the hens, rabbits, and birds well taken care of, they must not be owned in common, but one by him, another by you, and a third by me. Who would trouble himself about the property of another? And when the man has grown up, and become a husband, head of a family, a citizen, and man of business, how could he be expected, without a sense of the rights of property, to display the least activity? How could he desire to possess certain things, unless he supposed a respect for property in others? And, generally speaking, if this sentiment did not exist, how could we conceive of a state of society?

Henry Home* (Lord Kaimes) has already proved, that property is not based on social conventions, but on a particular internal sentiment, and that every encroachment on the property of another, is contrary to another sentiment—that of justice and equity—which is equally innate. Man, in fact, unlike the carnivorous animals, who, when their hunger is appeased, yield themselves to repose, has, independently of the instinct which impels him to seek for nourishment, a desire to possess other things besides. He needs quiet and a mixed diet; and he therefore gives up hunting and fishing, and procures flocks, which furnish him a more certain means of subsistence. He ploughs up a patch of ground, clears it of weeds, sows it and reaps the harvest; thus the land gradually becomes the property of man. He makes provision for the different seasons, and anticipates want; in this respect, he acts like the brutes, obeying a law

* Essays on the principles of morality and natural religion, 3d ed. 1779, chap. vi. Justice and Injustice.

much less liable than his reason, to lead him astray—a natural and innate propensity to make provisions. This propensity, without the sense of property, would be as inconceivable in man as in the brutes. He would be incessantly making provisions, yet knowing beforehand that his trouble would be lost. Would not man, in this case, be in contradiction with himself? Without the sentiment of property and respect for property, there would be only the right of the strongest; and without this sentiment, what should induce even the strongest to appropriate the provision of the weak, the more industrious? So, therefore, the case of him who stores up provisions, as well as he who plunders them, proves the propensity to own property and its foundation in nature. We attach far more value to a horse, an ox, a house, or garden, when they are our own property, than when we have merely the temporary use of them. Whence comes the universal belief of the injustice of theft and piracy, if the possessor have no right of property to the stolen object? Why should we be afflicted with the loss of an object, if we have no sense of the property of that object? It is with this sentiment, as with all other qualities. If nature had not given it to man, we should have had no idea of it, and would never have thought of making laws against theft.

Admitting, however, that the sense of property is innate, our views of the subject become quite different. There are people who, from cupidity, are induced to appropriate the property of another—usurers, cheats, pick-pockets, thieves, and pirates. La Bruyere has said—Supposing there are but two men on the earth, who have sole possession of it, and have divided it between them, I am persuaded that a rupture would soon take place from some cause or other, if it were only a dispute about their boundaries. For this reason, every one feels the common sentiment, that property should be secured from the attacks of such plunderers. We make the laws, or rather it is Nature, the Creator himself, that inspires them, while we imagine them to be our own work. The

laws therefore have sprung from the sense of property ; not the latter from the former.

Some think, that the wants of society alone would have produced the sense and the right of property. Social conventions may determine, under what conditions we are the legitimate proprietor of a thing, but society cannot give origin to the sentiment nor to the right. I have repeatedly shown, and I shall have again to revert to the subject, that there are no *artificial qualities*. Society presents points of contact, by means of which the activity of the fundamental qualities is displayed ; but, it has as little to do with the origin of these qualities themselves, as woman has with the instinct of propagation in man. If man and gregarious animals possess certain qualities suitable to the social state, it is because nature has designed them for the social state. It is only on such an hypothesis, that we can conceive of the existence of society. Sheep, when the sun is hot, put their head under the belly of their neighbor ; gregarious species place sentinels, and render mutual aid ; bees divide the different tasks among different individuals. The instincts which thus lead these and all animals to act, exist in each individual, before he has lived in society ; they remain inactive, when the same individuals are obliged to live solitarily, and are awakened at the moment society is formed. It is proved, therefore, that property and the sense of property, are institutions of nature, in man and brutes ; and as theft supposes property, theft is a natural phenomenon in man and brutes.

Every uncivilized nation is a band of robbers, that pillage their neighbors without measure or remorse. The cattle in the fields are always fair game, and, in the spirit of such jurisprudence, the coasts of the Egean Sea are ravaged by Homer's heroes, for no other reason than that these same heroes were fond of seizing on the brass, iron, cattle, slaves and women of the surrounding people.

A Tartar mounted on a horse, is a real beast of prey, who knows only where cattle are to be found, and how

far he must go to seize them. The same spirit reigned in all the uncivilized nations of Europe, Asia, and Africa. The antiquities of Greece and Italy, and the fables of all the ancient poets, are full of the examples of its influence. It was this spirit that first impelled our ancestors to enter the Roman empire ; and in later times this spirit, rather than respect for the cross, led them into the East, to divide with the Tartars the spoils of the Saracenic empire. Even the lower animals steal, such as the cat, dog, magpie. I know a dog, that will eat only what he has stolen. When these creatures commit a larceny so skilfully as not to be detected, they are extremely delighted. A tame magpie cares nothing for a piece of money given to it, but the moment you hide it away, and pretend to look after it or not to think of it, he will take all the trouble in the world to get possession of it. Here now is an observation that may be repeated daily. So certain is it, that theft is practised by the lower animals, that nature has taught them many means to prevent their being robbed. They hide away, bury in the ground, and watch their property. Every body knows how vigilantly bees guard the entrance of their hive, against all animals whose appetite is excited by their honey ; and such precautions could never have taken place, if theft were not a natural phenomenon in the animal kingdom. These considerations, in relation to the sense of property, naturally lead us to the solution of the question, What is the fundamental quality, to which the propensity to steal, belongs ?

The fundamental quality, to which the propensity to steal, belongs, is the sentiment of property, or the propensity to make provisions.

The sentiment of property and the propensity to provide for the future, are not only useful, but really indispensable, both in man and in brute. It was impossible to discover the organ of this propensity, confined to its primi-

tive destination ; this could be done, only when the organ was excessively developed. But, when the organ has obtained this degree of development and of corresponding activity, the legitimate sentiment of property, the rational propensity to make provision, of acquiring a competence, grows into a cupidity, which engenders a desire for appropriating the goods of another ; and, finally, when the organ is developed in the very highest degree, unless prevented by internal and external motives, it degenerates into an irresistible impulse to theft. All these different vitiations are so many degrees of activity in a fundamental propensity, which is essential to the sentiment of property and the propensity to provide. Here, then, we see something similar to the gradual depravement of the instincts of propagation, of defence of self and property, and of the carnivorous instinct. But we do not flatter ourself, with having saved nature from the reproach of creating a propensity to theft, though it is only the result of a very large development, and extreme activity of the sentiment of property. The two conditions exist in certain individuals, in virtue of the laws of organization, without their agency being concerned in it, in the slightest degree.

Seat and external appearance of the organ of Property and the propensity to make provision. Modifications of the manifestation of this organ.

This organ is formed by the convolutions marked viii. pl. viii. When these cerebral parts are very much developed, they produce a prominence on the head and skull, extending in a longitudinal direction, (viii. pl. xxvi. and xxvii.) from the organ of cunning, (ix.) nearly to the outer angle of the superior superciliary arch.

I have constantly found this prominence, in all inveterate thieves confined in prison, in all idiots with an irresistible propensity to steal, and in all those who, otherwise well endowed with intellect, take an inconceiva-

ble pleasure in stealing, and even feel incapable of resisting the passion which forces them to theft. One of my friends, a man of the finest talents, a good husband and father, and remarkably inclined to religious fanaticism, has this organ very large. When he sees scissors, knives, and other similar trifles, he feels a certain uneasiness, (*malaise*,) until he has put those objects in his pockets. He often has a store of tools of this kind in his house. If they are found there by the owner, he restores them with a hearty laugh; if not, he often presents them to his friends. He appears to be greatly delighted because two of his children have the same propensities, and manifests not the least concern about the influence they may have on their lot. These two children have the same organization as their father.

The physician of the prison at Grætz, in Styria, sent me a box of skulls, and in unpacking them, I was so struck with one of the skulls, which was extremely broad in the anterior-temporal region, that I exclaimed, "My God, here is the skull of a murderer!" The physician observed in his letter, that "the skull marked ***, belonged to N***, an incorrigible thief;" and yet he had not been able to discover in the skull the protuberance I designated as the organ of theft. Pl. xxvii. presents a front view of this skull; pl. xxviii. a profile view. We have never seen the organs, whose great activity disposes to theft, cunning, and murder, more largely developed than they were here.

In Ackermann's collection, we saw the skull of a horse-stealer, shaped very nearly like that represented in pl. xxviii., that is, flattened on the top and in front, and very broad in the temporal region. In the prison at Brucksal, we saw a skull precisely similar, which also belonged to a horse-stealer. In examining those who were confined in this establishment for a second offence in stealing, we found they all had the organ very much developed. In the prison at Bern, they brought me a man, thirty years old and over, and asked my opinion of his head. I found the organ in question very prom-

inent, and they then told me that this person was condemned to death for repeated thefts, and many escapes from prison. I found this organ just as large in two inmates at the prison at Hamburgh, called *Frohnerey*. One was the robber Zander, well known in the country; the other, Paul Peterson, was also an inveterate robber. At Marburgh, we found this organ extraordinarily large in three notorious robbers; one of the three and a woman, in whom the development of this organ was very well marked, had stolen from their infancy, notwithstanding all the punishments they had received. They laughed most heartily, whenever their thefts were spoken of; and so far were they from showing any repentance, that they related, with infinite zest, all the details of their thieving tricks.

At Manheim, the most incorrigible robbers, and those who have oftenest relapsed, are confined in the same establishment. In all, we found the organ of the sentiment of property, largely developed. We were particularly struck with its size in an old man, of whom I have already spoken, who was imprisoned for the seventh time, and who declared, with tears in his eyes, that it was impossible for him not to steal. It would be easy to add a hundred other cases, besides those I have related, and some of them have been mentioned while treating of the organ, whose excessive activity determines the propensity to murder.

It is with this organ, as with all the rest, climate and external circumstances appear sometimes to prevent, and sometimes to favor, its development. This organ is very small in the skulls of Caribs, that I have had an opportunity of seeing, although they were flattened before and on the top, and this people are said to have but little propensity to steal; and, therefore, says Rochester in his *History of the Antilles*, when they are robbed, they always insist that it must have been by a Christian. The Negroes are also little prone to steal, and in them the organ is moderately developed. I saw among the Spanish troops, that both the Arragoneses and Castilians

have the anterior temporal region a good deal flattened; and I was assured, that they were the most faithful servants, and equally incapable of stealing as of lying. Very different are the Calmucs, who have always been known for thieving and bad faith; and, accordingly, Blumenbach, speaking of their skulls, observes, that they swell out on the sides, *capita ad latera exstantia*. This remark is perfectly substantiated by two Calmuc skulls in my collection. If, in future, travellers would observe the organization of different people, and compare them with their manners, qualities, and vices, we should soon have the reality of this organ confirmed by a multitude of observations.

The propensity to theft is differently modified, according to its combinations with other very active propensities; but, in this subject, I must be contented with a few general views. When the instinct of theft and that of self-defence are both very active, the robber will despise ordinary larcenies: nothing less than burglary will satisfy him, and he will glory in the success of his enterprises, in spite of the danger which accompanied them. Heluin, the subordinate of Lepelley, united courage to the instinct of theft, and was therefore willing to be the mercenary agent of the blood-thirsty Lepelley. Bouhours, besides the instinct of theft in a remarkable degree, had considerable courage, and a pretty large instinct of murder. With her, homicide was merely a means, her main object being to rob. Robbers, endowed with great courage, are generally the most dangerous; and when to courage is joined the instinct of murder, the combination produces the most sanguinary brigands, like those of Cartouche, Schinderhannes, Picard, Storzenbecker, and the wretches of the Auxerre band.* The addition of cunning produces

* "Chaillard, called l' Eveillé, (*The Vigilant*,) declared an outlaw, was long the terror of this commune and the vicinity. Many attempts had been made to arrest him, but in vain. His habitation, which had several outlets, was a kind of fort, from which he defied all pursuit; he

pick-pockets, cheats, forgers, receivers of stolen goods, both male and female, (for women are still more disposed to this crime than men,) and those fellows, who raise money by telling people where they may discover treasures. When cunning predominates over the instinct of theft, the thief is often satisfied, provided he can steal with skill and address ; and, like the magpie, it is indifferent to him whether he shall keep his stolen goods, of which he makes no use, or restore them, even with pleasure.* When the instinct of the love of offspring and that of attachment, are combined with that of theft, the first determines the father or son to rob, to prevent those whom they love, from perishing with hunger,—a very commendable motive, and one which ought to

seldom went out of it, and never, unarmed. The inhabitants of the district would throw no light on his movements, so well persuaded were they that the very first suspicion would bring down destruction on its object. To threaten the authorities with his vengeance, he announced, that they would soon see him at the head of fifteen determined men like himself.

It was all important to prevent such a project. On the 11th, at 10 o'clock in the evening, a considerable force marched to the brigand's retreat. It was composed of a detachment of the legion of Vaucluse, of five mounted chasseurs and a brigade of gens d'armes. Chaillard's house was surrounded, sentinels placed at all the outlets, and on the roofs of the neighboring houses; and as soon as the day dawned, the leader of the detachment, followed by the gens d'armes, pushed into the wretch's den, and summoned him to surrender. He instantly disappeared, and a moment after, was perceived intrenched in a donjon, on the top of a little square tower, and pierced on each side with loopholes. He fired on the troop, and his first victim was a fusileer on the roof of a house, and another soldier fell soon after, grievously wounded. Chaillard's fire was so well sustained, that it was impossible to approach his house without exposing the troop to fresh losses. Finally, after a fusilade of four or five hours, he was shot in the arm by a ball, and a few moments after, one of the gens d'armes shot him dead with his carbine. In the donjon were found three fusils, and three pairs of pistols, six bundles of cartridges, two bags of balls, a little bag of flints, about four pounds of bread, and a demijohn of water."—*Journal des Maires*, 22d Sept. 1818.

* In those exorcising scenes, got up by several cunning thieves together, to cheat their dupes by degrees out of the money which they have promised them, the one that is endowed with a large development of the organ of *theosophy* takes the part of the priest, to conjure up the devil.

extenuate the crime.* When the robber is, at the same time, strongly impelled to travel by reason of a large development of the sense of locality, he will lead the life of a vagabond, and serve as a guide and a spy to robber-bands. The robber endowed with a great activity of benevolence, will distribute the products of his larcenies among the poor; and, as it is repugnant to his feelings to wrong private people, he will rob churches, and the public treasure. In the Copenhagen prison, called *Das Sklavenhaus*, we saw a very cunning and incorrigible thief, Peter Michell, who never stole but to give to the poor; and I have already mentioned a robber in Vienna, who, in consequence of his benevolence, confined himself to robbing churches. If the robber is an artist, or mechanician, he will make false keys, forge writings, and counterfeit money. The robber, endowed with the instinct of attachment and firmness, will die, rather than expose his accomplices. At Chaillot, I was shown a young man, of feeble intellect, who was remarkable for his piety, and had founded several chapels. The moment I saw him, I pointed out to M. Danécy, and to the others who accompanied me, an extreme development of the sense of property, which considerably astonished them, since they had merely considered him a religious bigot. Subsequent inquiries, however, disclosed the fact, that he was a consummate thief, and had even stolen the furniture of the chapels he had founded.

These modifications are infinitely numerous, and, by

* There was stolen from the church, at Mauleon, (Lower Pyrenees,) a ciborium, on the night of the 8th or 9th of June last; on the morning of the 7th of this month, a ciborium, of double the value, was found in a cross-aisle of the church, and in it the following billet:—

“As soon as I could sell a part of the grain which I have reaped, I spared no pains to repair the crime which the necessities of my six children, who were near perishing with hunger, induced me to commit. It is impossible to find me out; and, therefore, if I have now satisfied God, whose church I have aggrieved, I pray that all farther proceedings may be stopped.”—*Journal des Maires*, 22d Sept. 1818.

knowing the reciprocal influence of the organs, I have often astonished the people who have accompanied me to houses of correction.

VIII. Pride, hauteur, loftiness, love of authority, elevation. (Stolz, Hochmuth, Hersch-sucht.)

History of the Discovery.

A beggar attracted my attention, by his extraordinary manners. I reflected on the causes, which, independently of an absolutely vicious conformation, or of misfortunes, could reduce a man to mendicity, and believed I had found one of the chief of them in levity and want of foresight. The form of the head of the beggar in question confirmed me in my opinion. He was young, and of an agreeable exterior, and his head, in the region of circumspection, was very narrow. I moulded his head, and, on examining it with attention, remarked on the upper and back part of the middle line, a prominence extending from above downwards, which could arise only from the development of the brain beneath. I had not previously observed this prominence in other heads, and, for this reason, I was very anxious to discover what it indicated. His head, moreover, was small, and announced neither strong feelings, nor much intellect. After many questions addressed to the beggar, with a view to discover the remarkable traits of his character, I requested him to relate his history. He said he was the son of a rich merchant, from whom he had inherited a considerable fortune; that he had always been too proud to condescend to labor, either for the preservation of his fortune, or the acquirement of a new one, and that this unhappy pride was the sole cause of his misery. This reminded me of persons who never cut their nails, in order to convey the idea that they are not obliged to work. I made several remarks to him, and let him know that I doubted his veracity; but he always

reverted to his pride, and assured me that, even now, he could not resolve to follow any kind of labor. Although it was difficult to conceive how pride should cause a man to prefer begging to working, yet I was led by this person's repeated assurances, to reflect upon the sentiment of pride.

I very well recollected the grave and haughty air with which one of my cousins would draw out his handkerchief, fold it up, and return it to his pocket. He was seven years old, and I was hardly six, yet I was disgusted with his proud and pompous airs. He also scorned all the occupations in which our family were accustomed to engage, and wished to learn nothing that was going on ; he wished to enter the army. A prince in Vienna was remarkable for his ridiculous pride, his stiff gait, and his practice of constantly quoting his ancestors. Happily, he was bald in the region of the head, where I had noticed the prominence in the mendicant's head, and I thus assured myself, that he had the same conformation. These facts were sufficient to produce the idea, that pride is a fundamental quality, connected with a particular organ of the brain. I cannot believe it necessary to prove to my readers, that pride, loftiness, hauteur, are innate, and not acquired qualities. Every one, within the circle of his acquaintances, can find examples of proud and haughty men, and, consequently, proofs of my assertion. I shall, therefore, expose very briefly the natural history of pride.

Natural History of Pride, Hauteur, Good Opinion of One's Self in health.

Pride, arrogance, disdain, self-sufficiency, presumption, insolence, &c. are all derived from the same source. Modified by different degrees of intensity of action, and by the varied influence of other qualities, they are all the manifestation of the same organ. I pass by in silence, therefore, the discussions of grammarians and other

authors, on the force of each of these modifications, and proceed to examine the parts that each does and ought to perform in the human species.

“All men,” says Charles George Leroy, “incline to despotism, but, as wishes without hope are seldom durable, this tendency to despotism is limited, in the great majority, by a feeling of impotence, of obtaining an elevated rank in the class to which they aspire. The only result, however, is, that every one is excited, vexed, and harassed, for his whole life, by an uneasy desire of elevation. The idea of distinction once established, it becomes predominant, and this subsequent passion annihilates that which gave rise to it. From the moment a man compares himself with his neighbors, and attaches some importance to their regard, his real necessities are no longer an object of his attention or his measures. If the reality is denied, he wishes at least the appearance; hence, for the most part, results the love of outward decorations and of every thing calculated to give to others an impression of power. If he cannot expect to draw upon him the looks of the universe, or a whole nation, he is contented with being an object of remark to his neighbors, and of overtopping his equals, and thus his happiness arises from the concentrated attention of his little circle. This desire of rising above the place assigned to us, seems to be a contradiction to that proneness to servility, which is observed in most men, and which is also but a consequence of the love of power. We crawl at the foot of the throne, in order that we may still be above the crowd of heads which we love to bow down. No other result could be expected, than that the lowest slaves, in the view of their superiors, should be the haughtiest despots among those whom fortune has placed beneath them; and thus, in fact, is the constant phenomenon. The vizier humbles himself in the presence of his master, yet puts on the disdainful airs of the Grand Seigneur before the pachas.”*

* *Lettres philosophiques sur l'intelligence et la perfectibilité des animaux.* Nouvelle édition à Paris, 1802, p. 187, 190.

This internal sentiment, according as it is combined with different qualities, is manifested in so many different ways, that it seems sometimes to be in contradiction with itself; yet still, whatever form it may assume, it is always pride, haughtiness. One, like Antisthenes, covered with rags, and with not a sous in the world, feels it dishonorable to work for a livelihood, looks at every thing around him with contempt and disdain, thinks nothing worthy of his attention, and, in the fulness of his self-sufficiency, remains completely inactive as to all outward things. Another, puts no limits to his insolence; every thing above him, irritates and wounds him. With contempt in every look, and envy gnawing at his heart, he tramples every thing under foot, feels beyond the control of nature's laws, and, by statues, monuments, and temples, takes his place, even while living, among the immortal ones. Pride led Philip II. to compare the loss of twenty thousand men with that of a brook, and, under the dominion of the same sentiment, Aurelian chained vanquished kings to his triumphal car, and Septimius trampled upon the dead body of his enemy. Pride, too, under the form of generosity and magnanimity, induced Marcus Aurelius and Henry IV. to pardon traitors in their power. Here, pride is mortified with the slightest offence, or even indifference; there, it braves all attacks of its enemies, which only increase the opinion of its high importance.

There are certain men, with heads and hearts sufficiently strong, who are so deeply impressed with a sense of their own value, and so independent withal, that they know how to repel every external influence that tends to subject them. As far as practicable, they choose the freest countries to live in, and follow an employment that renders them independent, and exempts them from the caprices and favor of the great. That domination over their inferiors, which would lead to slavery under an absolute master, would be insupportable to them. The honors and distinctions that belong to merit, are humiliations in their eyes, when lavished on insignifi-

cance. If they prosper, it is only by their own efforts ; like the oak, they are sustained by their own strength, and to their own resources would they be indebted for all that they have. This is a bold, high-spiritedness, that has not yet degenerated into pride—a merit, rather than a defect ; often the companion of great virtues, the enemy of all meanness, and the support of courage in adversity.

Under whatever form pride may appear, it is no less indispensable. As man is designed for the social state, some must be born to command, and some to obey. Master and slave ;—such are the two conditions of uncivilized people, and, even where man pretends to have reached the height of civilization, each rash attempt to shake off the yoke of authority, proves him incapable of liberty. It is not true, that all men are born equal, and are destined to exercise the same reciprocal influence. Nature has allotted to each one a different station, by giving them a different organization, inclinations, and faculties. The slave-born man may rise to the master's rank, if endowed with talents, worth, courage, and a domineering spirit ; and he who is clothed with authority at his very birth, unless he knows how to preserve the gifts he has received from the caprices of fortune, will descend to the rank of a slave.

Observe children at their sports. There is always one who arrogates authority over the rest. He becomes a general, minister, and legislator, without either he or the rest suspecting it. The same thing takes place in schools and families. We every where encounter disdain, self-sufficiency, presumption, haughtiness, by the side of modesty, humility, submission, and even meanness. In civil and military institutions, we see only chiefs and subordinates, and power gradually concentrating, comes at last, willingly or forcibly, into the hands of one. Such is the fate of governments of every description, and associations of every kind. Even in republics, there is always one man from whom public opinion emanates. The very ones to whom the mon-

archical form of government is so revolting, are moved by envy and jealousy, their own spirits being excited by a thirst for power. Those, also, who trample upon all social order, robbers and banditti, testify in favor of the established law of nature. The one in whom the thirst for rule is strongest, puts himself at their head, and his comrades acknowledge him for their captain and leader.

Let those who may still be inclined to take pride, spirit, or love of independence for an acquired quality, look at savage and uncivilized people. All feel their equality, and are warm in the maintenance of their rights. Even when they follow a chief in the field, they suffer him to pretend to no formal command. They are not bound by his orders, and they march, not in consequence of a military engagement, but of mutual faith, and warmed by an equal ardor for the success of the enterprise. Among the Iroquois, and other nations of the temperate zone, the titles of *magistrate* and *subject*, of *noble* and *plebian*, are as well known as those of *rich* and *poor*. The Caribs, even after choosing a military chief, take good care to confer on him no civil authority. Their captain is not called in to decide their domestic disputes; the terms *jurisdiction*, and *government*, are not in their language. Even in the midst of pillage, glory is their principal object; the spoils of the vanquished are, to them, only the pledge of victory. Tribes and nations are their prey, but the solitary traveller, from whom there is nothing to gain, unless it be a reputation for generosity, they suffer to pass without insult, or even treat sumptuously.

The rude nations of the West, preferred death to captivity in their wars. More than once, when the Roman armies were pouring into captured cities, or forced entrenchments, they found the mother slaying her children, that they might not fall into the hands of their enemy; and the father shedding the blood of his family, and ready to plunge the dagger into his own bosom.

Among the North American Indians, courage is the principal point of honor. It is this that animates alike

the prisoner under the most painful tortures, and the torturers themselves. Indeed, they practise most cruelty upon those, whom they are desirous of treating with most consideration, to give them an opportunity of displaying all the energy of their courage. On the cowardly, they inflict a speedy death, by the hands of women. They disdain, as mercenary and vile, every occupation and enterprise which does not present dangers to be confronted, and glory to be acquired.

Thus every thing concurs to prove that pride, hauteur, love of authority, are innate in man; and, consequently, that this sentiment is founded upon a particular organ. The phenomena presented by disease, will convince us still more strongly of this truth.

Pride, Hauteur, Love of Authority in disease.

In conformity to principles, I have more than once announced, we may infer, that when, in disease, some particular quality is manifested in a much higher degree of activity than the others, it is fundamental. But in insanity, pride and haughtiness are frequently carried to an extreme degree. "It is common," says Pinel, "to see alienation accompanied with a presumptuous tone, and every feature swelling with pride, only during the paroxysm, and as a symptom peculiar to it. This same propensity, excessively active even from early youth, and inherent, it would seem, in the constitution, may be gradually increased, till it becomes the cause of real insanity. A tall, middle-aged man was remarkable for the harshness of his expressions and answers, as well as for his austere manners and violent gusts of passion. His looks and features bore the impress of the most haughty, gloomy, and morose spirit; his frame was agitated with continual restlessness, and bitter reproach and invective were liberally bestowed on every body around him. His savage misanthropy was augmented also by misfortunes in his business, and then his insanity burst forth.

He drew bills of exchange for enormous sums on his banker, as well as upon other houses entirely unacquainted with him, and soon after, he was confined for madness. He manifested the same pride in his confinement, and gave orders with all the arrogance of an Asiatic despot. He finally believed that he was Chancellor of England, Duke of Batavia, and a powerful monarch." (*Dr. Perfect, Annals of Insanity.*)

M. Fodéré ran great risks from a melancholic patient, who believed that he was the Eternal Father, because, he said, he did not evince sufficient respect for him. He afterwards speaks of an erotic mania, complicated with pride. "This kind of melancholy does not always depend on the natural instinct that brings the two sexes together, but it is complicated with sentiments of vanity and pride, that persuade us that we merit something more than human, or, at least, that we have attracted the notice of the first among mortals. We are not captivated by youth, beauty, nor charms, but by power, high rank, costly dress, servants, and wealth. Hence, the notion of some devotees, that they are loved by sylphs or angels, and of some men I have known, who withered away in the persuasion that queens and princesses have regarded them with favor."*

Mental alienation, accompanied with pride, disdain, and arrogance, and that, when the patients imagine themselves to be generals, sovereigns, and even God himself, is a very common form of the disease.

A maniac of this kind, who lived in a house within sight of the dome of the Val-de-Grace, imagined that it was necessary for that edifice to be removed into the garden of the Tuilleries, and that two men were sufficient to perform the removal. He thought he saw a relation of equality, between the strength of two men and the resistance of this enormous mass. They tried to make him sensible of the immense disproportion of one to

* *Traité du Delire*, T. i. p. 357.

the other, by calculating the weight of each of the stones in this vast structure, but he continued to think that the measure was possible, and even offered to undertake its execution. There soon succeeded extravagances, of another kind. He believed himself proprietor of all the forests in France, and, under this title, issued drafts for many millions on the public treasury. His notions became still more exalted, and he, finally, thought himself the greatest potentate in Europe.*

"A woman, deprived of most of her pecuniary means by the events of the French Revolution, entirely lost her reason, and was sent to the insane hospital. At first, she kept up an incessant chattering, and, in the paroxysms, she would address some incoherent words to the most inanimate objects, and utter the most deafening cries and vociferations. She thought she was granddaughter to Louis XIV., and claimed her right to the throne. Her imagination soon seemed to realize her desires; for she levied contributions and had the army in her pay. If a stranger visited the hospital, she thought it was in honor of her, and that they could be introduced only by her orders. Her companions in misfortune were duchesses and marquises in her suite, and she gave them her orders with a tone of supreme authority."†

"A patient, confined in a private asylum at Paris, during the paroxysms believed himself to be the Prophet Mahomet; assumed an attitude of command, and the tone of the Most High; his eye kindled, and he walked with a majestic step. One day when cannons were fired in Paris, on account of some events of the Revolution, he persuaded himself that it was in homage of him; he ordered those around to keep silence, and could not restrain his joy."‡

"A very worthy man, and father of a family, lost

* Pinel, op. cit. p. 92.

† Pinel, op. cit. p. 109.

‡ Pinel, op. cit. p. 111.

his fortune, and almost all his resources by the events of the revolution, and, from a state of profound sadness, he soon became insane. The symptoms, far from yielding to the ordinary treatment, and even to the most inhuman means, grew worse, and he was sent to the Bicêtre as incurable. Never was maniac so utterly given over to acts of extravagance. With body erect, and nearly bursting with pride, he believed himself to be the Prophet Mahomet, dealt his blows to the right and left, on all who came in his way, and ordered them to prostrate themselves and do him homage. The whole day was spent in proclaiming pretended decrees of proscription and death; his menaces and maledictions were liberally bestowed on the servants, and the authority of the superintendent he disdained and disregarded. One day, when his wife in tears came to see him, he broke out in the greatest rage against her, and would probably have killed her on the spot, had they not gone to her assistance. Mildness, and the gentlest remonstrance, were out of the question with a maniac who considered other men as atoms of dust.”*

“Three maniacs, each of whom believed himself to be, and assumed the title of Louis XIV., were one day disputing, with a little too much energy, their respective rights to the throne. The superintendent approached one of them, and drawing him aside, said with a serious look, ‘Why dispute with these people, who are obviously mad? Is it not well known, that you alone ought to be acknowledged to be Louis XIV.?’ Flattered with this homage, he retired immediately, giving the others a look of the most disdainful hauteur.”†

“A woman, extremely imperious, and accustomed to make her husband obey with even more than docility, remained in bed a part of the morning, and then insisted that he should come, and, on his knees, present her with

* Pinel, *op. cit.* p. 215.

† Pinel, *op. cit.* p. 220.

drink. She finally believed herself, in the ecstasies of her pride, to be the Virgin Mary.”*

“In these patients, the surest indication of approaching cure, is when they begin to perceive the false and ridiculous nature of their pretensions, and become docile under the remonstrances and reasonings of superintendents and physicians?”

“A man in the vigor of age, confined in the Bicêtre, believed himself to be a king, and always spoke with a tone of command and supreme authority. He had received the ordinary treatment at the Hotel-Dieu, where blows and violence only rendered him more furious and dangerous. One day he wrote his wife a most stormy letter, charging her with prolonging his detention, in order that she might enjoy entire liberty. He also threatened her with the whole weight of his vengeance. Before sending the letter, he read it to another convalescent patient, who disapproved of these wild transports of rage, and, in a friendly tone, reproached him with endeavoring to reduce his wife to despair. This wise advice was listened to and received; the letter was not sent, but replaced by another quite moderate, and full of regard. The superintendent, being informed of this docility to friendly remonstrance, saw in it the sign of an approaching favorable change. He hastened to profit by it, went to the maniac’s cell, to converse with him, and gradually led him back to the principal subject of his insanity. ‘If,’ said he to him, ‘you are a sovereign, why do you not put an end to your confinement here? why stay here, confounded with maniacs of every description?’ He returned, on succeeding days, to converse with him in a tone of benevolence and friendship. He gradually showed him the ridiculous character of his extravagant pretensions, and pointed to another patient who had long believed himself endowed with supreme power, and had become an object

* Pinel, op. cit. p. 303.

of derision. The maniac first wavered ; then soon began to mistrust his title of sovereign ; and finally recognized his strange alienation. Within fifteen days was this unexpected moral revolution effected ; and, after some months' trial, this respectable parent was restored to his family.”*

This partial mental alienation proves, that pride is a fundamental quality, connected with a particular organ of the brain.

*Seat and external appearance of the organ of
Pride, &c.*

The proofs I have related, in the history of the discovery of the organ of pride, not appearing to be sufficient to establish the seat and external appearance of this organ, I give some additional facts, that I may not be censured for the gratuitous maintenance of paradoxes. In the following exposition, I am obliged to restrain myself to a very few facts, as I have in respect to the other organs : my object is accomplished, if those I do relate, will enable naturalists themselves to make further observations.

This organ is formed by convolutions of the brain, (xii.) on the median line, directly behind and beneath the summit of the head, and therefore is manifested on the surface of the skull by one elongated protuberance, though there is really one in each hemisphere. (See xii. in the brains, pl. ix. pl. xi. pl. xii. and in the skull, pl. xxx.) It is only when the two hemispheres are a little separated, that the organ appears double on the surface of the skull.

I begin with a case, that strongly resembles that of my beggar. A young man, whose intellect was above mediocrity, had manifested from his earliest infancy, insupportable pride. He constantly maintained, that he was

* Pinel, op. cit. p. 254.

of too good a family to work, or apply himself to any thing. Nothing could free him of this absurdity ; he was even put, for eighteen months, in a house of correction at Haina. A physician in Vienna, otherwise an amiable man, carried his pride so far, that whenever called to a consultation, even with practitioners older than himself, or with public professors, he always took the precedence, both in entering and coming out of the apartment. When any document was to be signed, he insisted on putting his signature first. He had connected himself with the director of the Great Hospital, but solely, as he told me many times afterwards, for the purpose of supplanting him. At Heidelberg, I saw a girl of eighteen, of a remarkable character. Every word and gesture in the least familiar, revolted her. She called on God on every occasion, as if he too took especial interest in her affairs. When she spoke, assurance and presumption were depicted in her features ; she carried her head high and a little backwards, and all the movements of her head expressed pride. She was incapable of submission, and when in a passion, she was violent and disposed to proceed to all extremities. Although only the daughter of a quill merchant, she spoke her native language with extraordinary purity, and sought the acquaintance only of persons of superior rank. A count in the army, did not advance as he thought he deserved. He frequently conversed with me on many subjects, and spoke very sensibly, but always took the attitude of command. In these four persons, the organ of pride was very large.

It was also very large in a maniac in Baden, near Radstadt, whose madness consisted in believing himself a major. He had a small head, and the organ of pride was the only one much developed, all the other convolutions of the brain being very small. The left hemisphere, and, consequently, the left side of the head, was much larger than the right. The cranial bones were dense, but not too thick, as he died of phthisis at an advanced age. In the hospital of the poor in Friburgh,

we saw an insane man, who was extremely proud, and who sometimes had fits of real frenzy, when he would have committed murder and arson, if he had not been prevented. He declared, in a vehement and pathetic tone, that he is the stock, whence God created and preserves the world; that he has been crowned by Jesus Christ, and is the young man whom the Queen of Heaven has chosen for her spouse. His attitude is that of an arrogant despot. Deeply inspired with feelings of his high importance, he crosses his arms, and, to give an idea of his astonishing power, he strikes his chest and sides with violence. In general, he stands with one foot placed before the other, the body erect and a little inclined backwards. When I requested him to let me touch his head, he replied, with the most astonishing arrogance, "*Ich habe keinen Hopf, sondern ein Haupt,*" I have no head, i. e. such as common men possess, but a *Haupt*, a head peculiar to kings and gods. He then turned away, holding us to be totally unworthy of approaching him. We saw, however, very distinctly that he had the organ of pride very prominent. Socrates was not mistaken when he said to Antisthenes, "I see your pride through the holes of your garments;" for in his bust, the organ of pride is extraordinarily large. (Pl. lx. ix. fig. 5.)

We have often had an opportunity of examining the heads of leaders of banditti, and in all we have found this organ exceedingly large. In one whom we saw at Marburgh, and who was thought to be the notorious Picard, we found the organs of fighting, murder, theft and firmness, but particularly that of pride, very large. His manner was proud, haughty and disdainful, and he was considered the most dangerous of all the banditti. Long before, I had observed the organs of murder, firmness and pride, full as large, in another chief of banditti, whom I mentioned when treating of the organ of the carnivorous instinct. Driven to extremities by the whippings inflicted upon him, for the purpose of making him denounce his accomplices, he strangled

himself with his chain. We have observed, that rebel-chiefs, the enemies of authority and the sovereign power, the instigators of revolt, &c., are always proud and ambitious men. At Spandau, we saw two rebel-chiefs, father and son, in both of whom the organs of firmness and pride were largely developed. Many others, who were confined for insubordination, were similarly organized. The organ of pride, and the propensity to rule, is astonishingly large in the skull of the sculptor Cerracchi, (pl. lx. ix. fig. 6,) in my collection. He was guillotined at Paris. In Vienna, where I was his family physician, this man expressed himself in the most revolting terms, against every kind of authority, and especially the Pope. He forgot his art, while dreaming about the means of destroying monarchies. These people would overturn every throne, to become despots themselves; so that organization confirms the invariable lesson of history on the end of revolutions,—*Retire, and make room for me.*

The influence of external circumstances is very sensible on this organ, as well as on others. We generally observe, that the inhabitants of mountains are prouder than those of plains; that they have a stronger love of independence, and are more inclined to revolt. In our travels, we have no where found the organ of pride more generally developed in a very high degree, than among the Swiss. Who, too, has not heard of the inflexible pride of the inhabitants of certain Spanish provinces.

Thus far I have spoken of pride, haughtiness, disposition to rule, self-esteem, arrogance, independence: but to what fundamental quality do all these modifications belong? Before deciding this question, the reader must follow me in the discussion of a very doubtful point. Here, again, I shall rely solely upon facts, and when we have arrived at the point where they leave us, and are obliged to resort to reasoning, I will cheerfully yield my own opinions to the sagacity of the reader, and so much the more willingly too, because it can be attended with no unfavorable result to organology.

On the Instinct that directs Animals in the choice of Dwelling-places, (Aufenthaltssinn.)

Having studied the sentiment of pride, as a primitive quality, and its organ in man, I wished to ascertain if my observations would be confirmed by the lower animals. I therefore examined the heads of such of them as we are accustomed to call proud, such as the race-horse, cock and peacock. In none of these did I find a remarkable development of the cerebral parts, corresponding to the organ of pride in man; but I did find a considerable development of these parts in animals, in which I never should have thought of looking for it; that is, in those which voluntarily remain in the higher regions of the air, living on mountains, and other elevated situations; such as the roe-buck, chamois, wild-goat, and some species of eagles and falcons; and, what struck me most was, that the cerebral parts in question were the more developed, and the elongated prominence the most saliant, in proportion to the greater height of the dwelling-places of animals. The reader may imagine my astonishment at such an observation. That a predilection for physical heights, should, in animals, depend on the same organ as that to which the sentiment of pride, a moral disposition, is referrible in man, will appear, I thought, as improbable and inadmissible to every body else, as it did at first to me. I have laid down the rule, to communicate the progress of my observations, as well as the manner in which they have given rise to my opinions. Opinions that are not founded on fact, if not erroneous, are very likely to be so, and a naturalist ought to be less ashamed of committing an error in his interpretations of facts, than of founding his opinions on reasoning alone. I begin with some details concerning the habitations of animals, and perhaps we may, ultimately, discover some analogy between things apparently very different.

We are mistaken, if we attribute the choice of dwelling-places to the mere will of the animals themselves. Nature has assigned to the wild-goat and the crocodile, their respective places, as she has, to the cedar and willow. The fields and the woods, the valleys and the mountains, infected marshes and human habitations, the south and the north, are designed to be peopled by different species of animals. Of the majority of animals most generally known, there are two varieties ; one, inhabiting heights, the other, plains ; the one, villages, cities, and gardens, the other, forests, and the banks of rivers. We are acquainted with the domestic and the wild sparrow ; the nightingale of the gardens, and the nightingale of woody heights ; the gold-finch of the gardens, and the gold-finch of the woods ; the hare of the fields, and the hare of the mountains. Whence is it that animals, otherwise so similar, choose habitations so different ?

This diversity is still greater in the different species. The partridge, the gelinotte (*Tetrao bonasia*, L.) the ganga, (*Tetrao alchata*,) the lagopede, (*Tetrao lagopus*,) the zizel, (*Arctomys citillus* Gm.) the marmot, the water-rat, the mole, the brown rat, and black rat, the mountain-swallow, bank-swallow, barn-swallow, chimney-swallow,—what a difference in the choice of their abode ! And, since it is constant, we cannot attribute it to the will acting at random, but to an invariable law of their nature. But how has nature assigned to each animal its dwelling-place ? Nothing is easier, it is said, than to answer this question. The chamois climbs the mountains, the duck dives into the water, because necessity calls them there ; because there they find their nourishment.

There can be no doubt of the existence of a harmony between the organization of animals, and the external world ; otherwise, nature and its creatures would be in a state of eternal contradiction. If marshes were designed to be the abode of the chamois, while its proper nourishment grew on the tops of mountains, the species would soon have disappeared from the earth. For this

reason, every creature is, and must necessarily be, so organized, as to establish its abode where it finds its nourishment. But nourishment is not the only thing that determines the preference of abode. The different varieties of the same species which I have just mentioned, might live on the same food, which, when forced to it by external circumstances, induces them to live in places where they would not otherwise have lived, if they had had their choice. Besides, the chamois and wild-goat climb far above the region where their nourishment is found. The reason is, that an internal impulse impels them to seek the most precipitous heights of the mountains, as it does the young duck, hardly clear of its shell, without any previous knowledge, to run to the water, without heeding the anxious cries of the hen that hatched it. The lark sings in the air, though nothing prevents him from singing on the ground. The royal eagle watches its prey from the clouds, though it might as well, like the owl, hunt it in the lower regions. Every day we see swallows, pigeons, and rooks, rise into the air for pleasure alone, and describe a thousand circles with no intention of seeking nourishment.

External appearance of the organ of Height in brutes.

In all animals that reside in elevated places, we find in the median line, immediately above the organ of the love of offspring, or between its two bumps when double, an elongated prominence, marked xii., on all the plates, precisely similar to that of pride in man. Let us compare pl. lxxv., the skulls of the roe-buck and roe, in which this organ is but slightly prominent, with those of the chamois, (fig. 1,) and wild-goats, (fig. 2, pl. lxxiii.) in which it has its highest degree of development. We see that elevation (xii.) in the roe-buck is much less prominent than in the chamois, in which it is less than in the wild-goat, which always seeks the summits of the highest rocks on the highest mountains. Thus, by the

simple inspection of this region of the head, we may determine with certainty which of the species we examine, dwells in the plains, and which, on the mountains; and the higher the eagle, or any other bird, soars into the air, the more prominent is this region of the skull. In the black rat, (*mus rattus*,) this region is flat; in the brown rat, (*mus decumanus*,) which is fond of climbing into trees, it is prominent. The same difference exists between the skull of the common partridge, (*Tetreo cinereus*,) and that of the mountain kind, (*T. montanus*;) between that of the hare of the fields, and that of the hare of the mountains. I do not know whether this cerebral part undergoes similar modifications in aquatic animals. One thing, however, is certain, that we must admit a primitive organ, whose activity assigns to animals their place of abode. It is certain, too, that a considerable development of this organ inspires animals with a predilection for elevated places. If, then, we can render it probable, that the same cerebral part which inspires animals with a desire for heights, when differently modified and influenced by the simultaneous activity of other organs, produces pride in man, and, consequently, that the predilection for physical heights does not differ essentially from that of moral height, except in its object, we may designate, I say, the result of the action of this organ, as the *instinct of height, instinct of elevation*; at least in cases of more than ordinary development. Here, then, the question is naturally presented,—Is there an essential difference between the instinct of physical heights in animals, and the propensity of man to rise to a moral height? Is the difference really so great as to make it ridiculous, to consider both only as gradations of the same sentiment? Is it possible to discover an analogy between the two? Those who maintain the negative, will gain their cause, since they have every reader and hearer in their favor, before they begin. But the opinion of the multitude cannot discourage me; I proceed, therefore, to state the pro and con.

Is there any Analogy between the instinct of Height in animals, and Pride in man.

If the organ of the instinct of height, in brutes, and that of pride, in man, have the same place in the brain and skull, then this fact is in favor of their analogy. I have marked, in truth, in the brain and skull, immediately between and above the organ of love of offspring, a place as yet unknown to me, (iv. pl. ix. and xi. ;) and it is above this spot, that I have indicated the organ of pride, (xii.) Notwithstanding all my care, I have never been able to observe any kind of prominence in this place, nor to understand what it is intended for. I have found, however, that, in many skulls, the prominence of pride extends to that of the organ of love of offspring. This happens when the organ of pride is very large. It seems probable, therefore, that the convolution, marked iv. pl. ix. and pl. xi., belongs to the organ of pride. I am still more inclined to believe that this convolution, and that marked xii. constitute a single organ, from the facts, that the convolutions immediately above the organ of propagation, and directly in the median line,* are very large in animals eminently

* Comparative anatomy presents some very remarkable differences in the seat of the propensity for physical height, as well as in that of the organ of the love of offspring. In man and the ape, for example, the latter organ extends in the posterior lobes to the median line. In birds and most mammifera, this organ is not found on the median line. It occupies the posterior part of the second range of convolutions, counting from the median line. This circumstance, also, produces a variation in the seat of the organ of height. In man, and the ape, there exists a cerebral mass, between the cerebellum or organ of propagation, and the organ of height. In animals that are designed to choose elevated places, the middle convolutions immediately above the cerebellum, are much developed and form an oblong protuberance. In order to make these differences more apparent, I have drawn the brains of a cat and an ape, and the skulls of a cat and a panther. Pl. lxxvii. the convolutions xii. xii. and the elevation xii. are the organ of height. The convolutions ii. ii. and the prominences ii. belong to the organ of the love of offspring.

endowed with the instinct of heights. The brain and skull of the chamois and wild-goat furnish a striking example of this kind. In cases, even where we should suppose that the lower part (iv.) of these convolutions would produce the instinct of physical height, and the upper part (xii.) that of pride, the very near vicinage of these cerebral parts would always lead us to admit an analogy in their functions. It must not be forgotten, that, in man, many organs are more voluminous and complicated than in other animals. The organ of the sense of locality, that of music, and even that of physical love, are more perfect in man, in the same proportion that their functions are so, although the primitive destination remains essentially the same. It would, therefore, be only in conformity with the course of nature, that the organ in question should be so much more voluminous in man, since it is designed to accomplish a much higher end.

In man, even, the action of this organ seems, in some cases, to be confined to the instinct of physical height. I know men, who have a passion for climbing mountains, ascending steeples, &c. Wherever they may go, their first concern is, to scale the neighboring heights; and mountainous countries they prefer to all others. I have found, in all of them that I have examined, a pretty large development of this part of the brain.

And why, too, is this organ more developed on heights, than in plains? I know well enough, that we may be as proud in a valley, as on a mountain, but it is no less true, that pride is much oftener found in elevated situations. If there be not a very strong analogy between the instincts of height and of pride, why are mountaineers more proud and high-spirited, more attached to independence, more inclined to a spirit of domination, than other men? Why do they consider themselves as far above the inhabitants of the valley in moral respects, as, in fact, they are physically higher in their dwelling-places?

Observe children, and even adults, when, in their

sports, they yield to the first sensation and impulse they experience. They stand on tip-toe, get up into chairs, and love to measure their height with that of tall persons, and even to exceed them in this respect. Small, proud women choose a very high head-dress, and wear high-heeled shoes. What tickles the warrior's pride, more than the hair caps and plumed helmets? Generally speaking, whatever elevates and enlarges one's own self-feeling, emanates from the inward sentiment of pride, and by reaction awakens this sentiment in us. It is the custom of all people to place those who command others, in an elevated situation. What would the throne and sovereign power have in common, if man were not here guided by an inward sentiment, of which he is unconscious himself?

It is objected, that children climb up into seats, because they are refused many things, for the simple reason that they are small; and because, too, they have observed the prerogatives enjoyed by large people, or heard them extravagantly praised. I do not believe that this constantly uniform conduct of children is founded on such reflections. I see in it, far more naturally, the first infantile manifestation of pride. Only persuade men, they add, that the lowest place is the most honorable, and every body will prefer it. I allow this; but it will be because man is reasonable enough to prize a place of moral distinction higher, than a merely physical elevation.

All the expressions used to designate pride, or to express our estimation of moral qualities, are taken from physical height. 'He carries his nose up;' 'he is elevated;' 'he bridles up;' 'he struts;' 'he beholds us from the height of his grandeur;' 'he has surmounted every obstacle to his elevation;' 'he has a haughty air, temper, mien and manners, which have made him many enemies,' &c. On the contrary, all expressions used to designate the opposite of pride, and our estimation of moral qualities, are taken from the opposite of physical height. 'The hypocrite crawls;' 'he sinks into the

earth for shame ;' 'nothing deserves contempt more than baseness ;' 'lower his pride ;' 'trample on his credit ;' 'God humbles the proud ;' 'Rome humbles the pride of Carthage ;' 'he stoops to things unworthy of himself ;' 'to be prostrated before the majesty of the Supreme Being ;' 'the humble stoop ;' 'when we wish to be exalted, we should fear, lest we be depressed.'

Piron, wishing to portray the elevated character of Gustavus Vasa, from the influence of blind instinct, mounted a ladder. Thus placed, the thoughts, images, and expressions proper for his picture, crowd upon his mind. Hylas, one day, played a part, ending in these words : 'The great Agamemnon.' To present this idea of grandeur, the actor forcibly drew himself up into a stiff erect position. Engel, in his *Mimique*, observes, that Hylas should have stood erect without any constraint, in order to express by posture, elevation and nobleness of spirit, and by his features, the serious air of a man of profound reflection ; and that, then, his natural language would have given more precisely the idea of the moral grandeur of a sovereign.

Fouquet, celebrated for his profusion, pride, and ambition, placed on his arms and in many parts of his magnificent seat, a squirrel, with this motto—*Quo non ascendam ? Whither shall I not rise ?*

M. B * * * was always so amply endowed with pride, that, in childhood, he never could get familiar with his companions, nor in adult age, with his equals. In consequence of a wound in the head, in which the organ of pride was involved, and during his long convalescence, the action of this faculty was exalted to such a degree, that he treated his superiors like subordinates, and wrote them letters in a laconic imperative style, ordering them to yield him this or that favor, or distinction. At the same time he was subject to visions, the nature of which, we shall presently see. These facts were communicated to me by his wife. A minuter account of this complaint is contained in the following letter, written by himself, the original of which is in my possession.

“I comply with your wish to be informed of the different circumstances of an accident that happened to me at * * *. I could have made a larger picture of all my visions while sick, had I thought of it at the time, but I tried to forget them, that they might not utterly craze me; though it argues one a little cracked, indeed, to be thinking at all of his visions. But for the facts.

“I had just changed my lodgings. I was dissatisfied with my servant, and, on the day of the accident, I had ordered him to sleep at the * * * chateau. Having retired alone to my chamber, about ten o'clock in the evening, (in December I think it was,) I got ready to lie down, and having undressed, extinguished my fire. In rising from the hearth, I struck the upper and posterior part of my head, against a nail that had been driven in just below the mantel-piece, for the purpose, it seemed, of supporting a cord, by which our predecessors in the place suspended their meat in order to roast it. I fell down senseless into the fire-place, and was found, as I was afterwards told, lying on my left side, with my head and part of my body in the fire-place. My feet, extending in the fall, encountered the table, and overturned it on me. The next morning, when the chamber-maid came in to make my bed, she found me in this situation and senseless. She called for assistance, and I was put in bed, and attended during my sickness, by my friend, M. C * * *. Notwithstanding all their attention, I remained two or three days without regaining my senses, and was given over by the physicians. They thought me dead, and an officer was appointed to command the battalion, that was to pay the funeral honors. At last, on the second and third day, I came to myself, and was told of all that had happened. I wrote to * * *, to inform him that I was not dead. Having recovered my senses, I was attacked with a very severe nervous fever, and was very ill. My mind wandered, and, in the paroxysms of my fever, I exclaimed that I had nails in my head. I imagined that blood came from my ears, though whether it really did or not, I do not know. As

for the visions which I now proceed to relate, I am unable to say, whether they occurred while I was senseless, or after I recovered my senses, and during the paroxysms of the fever.

"It seemed as if I were raised above the clouds, sometimes very high, but ordinarily in the middle regions. I often saw the figure of a man, completely clad in armor of polished iron. In my aerial travels, I saw some very extraordinary things, which I can no longer recollect. I rapidly passed from burning to freezing regions, and sometimes descended upon a kind of terrace, and into deep pits. I walked in prairies, where I saw multitudes of diamonds and very beautiful things, that I wished to collect ; and they told me that my hands went through the motions of picking up something.

"Having swallowed, for many weeks, a great many drugs, particularly ether, I entered upon my convalescence, which was, in fact, another disease. Many persons contributed to my restoration : I went into society, and tried to divert my mind by all possible means. At home, I devoted my time to drawing, though my physician objected, on account of my feeble sight. During the three months of my convalescence, I had some very strange, but absurd ideas, which, no doubt, were the sequel of my visions. I wished to fly, and imagined I was making pasteboard wings. However, I never put my absurd idea into execution."

I will add, that during his convalescence, M. B * * * always preserved the proud and high-spirited disposition which he previously had. Among other facts also related to me by his wife, I learned that he would have thought it debasing to perform, or suffer his wife to perform, the simplest domestic act. If it were merely to shut a window, or bring a glass of water, his pride revolted at the idea of doing it himself, or suffering his partner to do it ; a servant must be called for every thing of this kind.

Now, let the reader decide, whether we are authorized to admit an analogy between physical height,

and moral height or elevation ; whether we must admit two organs essentially different, one for the instinct of height, and one for pride, or consider them as belonging to one. But, let me repeat, however this question may be decided, the decision cannot be unfavorable to organology ; for, whatever it may be, it is still certain, that the instinct of height, of pride, of love of authority, have their organ in the brain, and that this organ is placed in the region I have indicated. I also leave it to the reader to decide, whether the fundamental quality to which this disposition belongs, should be called the *sense of elevation*, self-esteem, or self-love. Pride, loftiness, hauteur, presumption, thirst for rule, &c. result from the great activity of the same organ. Modesty, want of a good opinion of one's self, humility, meanness, result from its too feeble development.*

* "It is certain, and must be conceded," says Spurzheim, "that animals which live on mountains, or which are fond of high regions, have one part of the brain more developed than the species of the same genus which live in flat and low countries. This difference is very sensible in roes, hares, cats, rats, &c. Yet it appears to me that this circumstance by no means authorizes the conclusion, that the faculty which leads animals to seek elevated situations, is essentially the same as that which makes man proud and haughty."

"He also supports his opinion by saying, that different faculties which are merely physical in animals, become moral in man, and quotes physical love as an example. Now I think, that all physical faculties common to man and animals, preserve their nature in man, and that the faculty of physical love is, in itself, always the same. It is obvious, however, that this propensity may be accompanied by other sentiments, especially by attachment."

"Gall says, that mountaineers are proud, and particularly attached to their independence and moral liberty. Being attached to mountains does not exclude self-esteem and firmness, which lead to independency. Moreover, I do not think that the inhabitants of Switzerland have more natural pride than the Hungarians. The former, however, struggled for independence, while the latter could not endure the civil liberties which the Emperor Joseph the Second allowed them. The Spaniards are notoriously proud, but show little inclination to be free."

"Gall quotes several examples of proud persons, being particularly fond of climbing upon mountains, and to great elevations. My experience has shown me both proud and humble persons, who felt a peculiar pleasure in going upon towers and other elevated places ; but they did so to see the scenery of the surrounding country. This in-

Objection.

“Does the organ of habitation,” says Demangeon, “which Spurzheim admits, and Gall does not deny, occupy the same place in the brain of animals that prefer the tops of mountains, of those that live in plains, and those of amphibious and aquatic animals? Gall, who is fond of grafting different fruits on the same stem, finds, in the organ of pride and vanity, the instinct for inhabiting mountains; but I do not see, why the instinct for living in the plain, and that for living in the water, may not equally reside there; else it might be said with more truth than ever, that extremes meet; and it would be no more surprising, than that our physiologist should have identified benevolence and justice in their origin. The ducklings, hatched by a hen, run to the water, as soon as they are hatched, from a primitive instinct, and leave their mother, which is afraid of wetting her feet, to cluck in vain on the edge of the water. Now, do the very opposite instincts of the hen and the duck, solely arise from the difference of their feet, which in the latter are webbed? Sound physiology sanctions no such doctrine; for it teaches, that the bodily parts proper for the execution of an action, are subordinate to a primitive disposition of the life of relation. It is hardly credible, that a single organ, or the same bundle of fibres, should preside over such different, and even opposite tastes and instincts; and I believe that the organ of habitation still contains some dark closet, into which our physiologists have not yet penetrated. It may be, that

clination then belongs to the organ of locality, as I shall afterwards explain.”

“Thus, I separate the instinct which carries animals to physical elevation, from the sentiment which produces self-love and pride; and I consider the first as a modification of the feeling which determines the dwelling-places of animals.”

ED.

Gall supposes here, too, a negative quality, which causes animals to dwell in low places, and in the water. But such a quality can be no function, unless we admit functions without an organ, which would be contrary to the whole doctrine of the brain. Thus, animals wanting the organ of height can dwell no-where, or must dwell just where chance carries them, which is contrary to observation."

This objection being conceived in the same spirit as that against the carnivorous instinct, I shall reply to it in the same manner. With all his reasonings, Demangeon cannot destroy the fact, that animals that live on heights, have the cerebral part in question, larger than those which live in plains, water, or low places; and this is all I am bound to prove. Does he believe that as many different organs are required, as there are places of habitation? He is at liberty to discover them. In the near-sighted and the far-sighted, the mole and the eagle, the organ of vision is differently modified, but occupies the same place in both. Thus the organ, which, in its largest development, and with certain nervous fibrils, inspires the instinct of height, in another mode of development, and with other nervous fibrils, inspires the instinct for plains or water. In conclusion, I am glad to see Demangeon, as well as other physiologists, beginning to acknowledge that beautiful principle of sound physiology, which I have taken so much trouble to establish, viz. that the executive organs are always governed by the legislative cerebral organs; that the intelligence of the elephant, and the industry of the beaver, do not reside in the trunk, nor in the tail; and, consequently, that the duck and hen do not receive their different instincts from the different structure of their extremities, which are only in harmony with the faculties of their brains.

IX. Vanity, Ambition, Love of Glory, (Eitelkeit, Quhmsucht, Ehrgeitz.)

History of the Discovery.

While engaged in the insane hospitals, in establishing my discovery of the organ of pride, I met with a woman, who imagined herself to be Queen of France. I expected to find the organ of that sentiment large; but, instead of the long, oval prominence, on the superior, posterior, and middle part of the head, I found a very distinct hollow, and, on each side of it, a pretty large, round prominence. At first, this circumstance embarrassed me. I soon perceived, however, that the character of this woman's insanity differed materially from that of men alienated through pride. The latter were serious, calm, impetuous, elevated, arrogant; and they affected a masculine majesty. Even in the fury of their fits, all their motions and expressions bore the impress of the sentiment of domination, which they imagined themselves to exercise over others. In persons insane through vanity, on the other hand, the whole manner was different. There was, then, a restless frivolity, an incessant talkativeness, the most affected forwardness; eagerness to announce high birth, and inexhaustible riches, promises of favor and honor,—in a word, a mixture of affectation and absurdity. From that moment, I corrected my ideas relative to pride and vanity.

The proud man is imbued with a sense of his own superior merit, and, from the summit of his grandeur, treats all other mortals with contempt or indifference. The vain man attaches the utmost importance to the opinions entertained of him by others, and seeks eagerly to obtain their approbation. The proud man expects that people will come to him and find out his merit. The vain man knocks at every door to attract attention, and supplicates for the smallest portion of honor. The

proud man despises those marks of distinction, which, on the vain, confer the most perfect delight. The proud man is disgusted by indiscreet eulogiums. The vain man inhales, with ecstasy, the incense of flattery, however awkwardly offered. The proud man never descends from his grandeur, even in circumstances of the most urgent necessity. The vain man, to gain his ends, will humble himself, even to crawling. Pride, thirst of domination, are the traits of a very few individuals, while the domain of vanity, self-love, extends, at least to a certain degree, to every member of the human family. This may be sufficient to show that pride and vanity are two very different fundamental qualities, and that we must admit a primitive organ for each.

Natural history of Vanity, of Ambition in man.

Vanity, ambition, love of glory, are modifications of the same fundamental quality, which has received different denominations, according to the importance of the objects with which it is concerned. Woman shows her vanity in dress; the statesman derives his honor from his offices; the soldier, his glory from defending his country. This sentiment is as common, as it is beneficial both to the individual and society; for, it is one of the most powerful, laudable, noble, and disinterested motives to action. How many brilliant deeds, instances of generous devotion, and admirable exertion would the history of our race have never known, without the influence of this sentiment! To excite us to labor and to good deeds, even in early childhood, our parents and instructors can employ no more efficient motive than that of honor, ambition, emulation. And to the generous, noble-hearted man, what recompense can be more flattering, than public marks of distinction and merit, celebrity, and a wide and brilliant reputation?

For my part, I like ambition, and a sense of honor,

in my shoe-maker; for it leads him to make me good shoes; I like the vanity of my gardener, for it procures for me the very nicest fruit. I want no advocate, physician, general, or minister, who is not anxious for glory, and is sensible to no other charm than that of gold. I like the naïve vanity of that young girl; and I predict that, some day, she will be ambitious of being an excellent wife and mother. Correct people's notions of the real value of things, and society will always be better for this pretended weakness of man, than for the apathy and indifference of those philosophers, who affect to despise worldly interests.

However the subject may be viewed by satirists and moralists, I thank nature, for having endowed us all with more or less vanity, self-love. Allowing that my vanity disturbs you; that modesty, on my part, and an exclusive deference for your merits, would put you more at your ease; yet be candid, and say, whether, if you should assume such a character, you would be as happy, as contented with your lot, qualities, and talents? It is very rare for equity or justice, to be remarkably well disposed to appreciate good qualities, or extenuate bad ones. But the divine enchantress, vanity, consoles us for our defects, and for the advantages of our equals. Ever ingenious in the work of self-compensation, she discovers in each one of us some merit, some kind of happiness, which we prefer to every thing else. Where is the man, who, under all these relations, would change his character for that of another?

To all classes of men is this quality allotted. Vanity is the same in forests, villages, and cities. The North American Indians think much of their personal appearance; they devote considerable time, and take infinite pains in decorating themselves in their way, and in preparing and giving durability to the colors, with which they paint themselves, and are constantly occupied in retouching them, in order to appear to advantage. There, vanity seeks admiration in fine cattle, and well-cultivated fields; here, it endeavors to attract the jeal-

ous eyes of others, by dress, magnificent equipages, splendid liveries, titles, &c. &c.

It is vanity, too, as Count Segur has said, which makes no nation, however uncivilized, believe itself inferior to the rest of mankind, or contented with claiming even equality. They all have mutual hatred and contempt for one another. Attached to objects which particularly interest them, and respectively considering their condition as the climax of human felicity, they all pretend to preëminence. The most of them, each in its kind, set themselves up for a judge and a model of perfection, arrogate to themselves the highest rank, and distribute the lower ranks and degrees of consideration to others, according as they approach their own habits of acting and thinking. One is vain of the personal character, or of the knowledge of some of its members; another, of its wealth, its industry, its antiquity, its population, and power; while they, who have nothing to boast of, are vain of their ignorance, their simplicity, their mountains, their immense forests, their slavery, their poverty, of the absolute despotism even of their tyrants. The savage cherishes his independence of spirit, which can endure no labor, and recognizes no superior. It was proverbially a form of imprecation, much used by the neighboring people of Siberia, that their enemy might be reduced to lead the life of a Tartar, and be mad enough to rear and pasture cattle. Before the reign of Peter the Great, the Russians believed themselves in possession of every thing that conduced to the glory and ornament of nations, and despised, in proportion, their western neighbors of Europe. In China, the map of the world was a flat square, the greater part of which was covered by provinces of this vast empire, while the despised remainder of the human species was left to occupy some obscure corners towards the extremities. Can we, after this, be indignant at seeing a great and ostentatious people complacently take rank of all other people? Ought we, also, to be astonished, that another great and amiable nation daily sings the praise of its arts, its sci-

ences, its culture, its institutions, its national character, its sky even, and considers them as prerogatives, exclusively appertaining to it alone? I like this vanity, also, because it creates a thousand artificial wants, increases the conveniences of life, embellishes our dwellings, and occupies and supports industrious hands. To this, principally, are we indebted for the flourishing state of the arts and sciences. Collections of works of design, sculpture, painting, and natural history; libraries, gardens, monuments, palaces, and even our temples, would never have existed, or been pitiful things, without the inspiration of vanity, or the love of distinction.

Thus it is that luxury and show, far from being the source of the corruption and ruin of nations, become the moving spring and support of the arts and sciences—the soul of commerce—the agent of national grandeur and opulence.

Finally; it is the same sentiment still—vanity—which, though they suspect it not, opens the hands of the rich, and scatters their bounties on the poor and wretched. It is a fine precept, no doubt, that the left hand should not know what the right hand giveth; but it is requiring too much of human virtue, while we desire the alleviation of human misery. Publish donations, benefactions, and endowments, and you add a powerful motive to charity,—you command it—you wring it from insensibility and avarice. Considering vanity in this light, where is the censor, who would wage war against it? True, indeed, vanity is frequently the accompaniment of mediocrity, the sign of silliness, and bestows on its possessor a purchased title. He thinks himself in credit, because he is admitted, with the crowd, into the houses of the great: he sets an exaggerated value on his smallest qualities; and his self-love excites pity, and often ridicule. But why should we be jealous of the little enjoyments of an inferior being? And what are its slight evils, compared with its beautiful results, when acting in combination with superior qualities and talents?

Vanity, however, is ever inexcusable, when it becomes

the source of envy, jealousy and calumny ; when it endeavors to encroach on the merit of another ; when it delights in dimming the virtues, and magnifying the defects of those who displease us ; when it is ashamed of benefits received ; when it sows the seeds of discord, and engenders disquiet and hatred ; when it rejects advice, and blinds a man to his own weakness.

It is unnecessary here to prove, that self-love, vanity, and ambition exist in different degrees in different individuals. Observe children ; while some are insensible to all humiliations, others are mortified by the slightest reprimand. Look at criminals exposed in the iron collar ; and you will see that, while some are overwhelmed with shame, others look on the spectators with every expression of disdain, indifference and impudence,—a conclusive proof, that punishments equal in law, do, nevertheless, vary in intensity, according as they are applied to different individuals ; and that the more hardened in crime are, ordinarily, the least punished.

It is the habit to charge the fair sex with more vanity, in trifles, than men. Women know very well, that the toilet heightens the effects of their charms, and, to men's eyes, gives a relief to their other good qualities. Thus this amiable weakness testifies in favor of their desire to render themselves worthy of our approbation. But when I see that swarm of coxcombs and fops, the slaves of the most extravagant fashions ; when I see men crowding the public walks, some on horseback, and some in elegant carriages, and coveting the admiring gaze of the idle ; when I see the soldier with head erect, strutting along, when seen by women ; when I see the pains and manœuvres taken by insignificant men to obtain a title, or a cordon,—then the question of the relative degree of vanity in man, and woman, seems to me decided.

From all these considerations, it is to be inferred, that the sentiment of self-love, vanity, ambition, is a fundamental quality, inherent in the human species, and, consequently, founded on a primitive organ of the brain.

Vanity, Love of Approbation in Brutes.

Brutes, too, are fond of praise and approbation. With what fulness of delight does the dog receive our caresses and praises! how sensible is the horse to marks of affection, and how ardent to outstrip his rivals in the race! Every one knows that, in the south of France, they decorate the mules with bouquets when they travel well. The most painful punishment that can be inflicted on them, is to deprive them of their bouquet, and tie them to the back of the carriage. I have a female ape, which, whenever they give her a handkerchief, throws it over her, and takes a wonderful pleasure in seeing it drag behind, like the train of a court robe. One of my bitches is never happier, than when she is carrying my slippers in her mouth. Charmed with this honorable burden, she bridles up, and wriggles her whole body; and the more I exclaim, "fine Stella, fine Stella!" the more animated are her movements, and she passes from one to another, to obtain a tribute of admiration. She might have been likened to a country damsel, in a new gown, on her way to church, wriggling to and fro, with head up, neck stiff, and chest protruded, to draw upon herself the envious looks of her companions. This same bitch, that had always been very lively and fawning, became suddenly afflicted with a sullen sadness, and, in spite of all I could do to enliven her, she continued lying in her corner. After two years of melancholy, she suddenly resumed her former gaiety, and began to caress me with her ordinary liveliness and affection. In the course of the same day, I learned that a squirrel, which I had in the house for two years, had been killed. Never was unquiet, vain and jealous courtier, more deeply wounded, than was this poor brute, by the presence of the strange animal. Birds are just as much delighted with being caressed by their master. They turn from one side to the other, approach him, strike their wings, and express their pleasure by low and gentle tones.

Alienation of Vanity.

In health even, the vain-glorious man deludes himself with the idea of possessing qualities he does not possess : in his eyes, nothing is more important to the world, than himself ; in alienation, therefore, the function must be so much the more disordered. In the account of its discovery, I have given two cases, which sufficiently prove, that the sentiment of vanity may be in a state of excitation independently of other qualities. Every insane hospital furnishes examples of this kind. I attended, not long since, a very worthy girl, who had always prized very highly the benevolence of her mistress, a lady of high rank. In her alienation, besides certain fixed ideas relative to amorous intrigues, she imagined herself to be immensely rich, and of a very distinguished rank. She began by giving away her wardrobe ; then she went into shops, and purchased goods fit only for princesses.

From all I have said, it follows, that vanity, ambition, love of glory, is a sentiment which must have its primitive organ in the brain.

Seat of the organ of Vanity and External Appearance of this organ.

This organ is formed by the convolutions of the brain marked xi. pl. viii. pl. ix. and is by the side of the organ of height. It is manifested in the cranium by two large prominences, projecting like the segment of a sphere, situated by the side of the oval, elongated prominence of the organ of height. These prominences are on the parietal bones, at about one-third the distance between the parietal and the temporo-parietal suture, reckoning from the former. Hence it is, that the head of vain people is shorter from the forehead to this organ, (pl. xlvi.)

than that of those, in whom the organ is very small. Since the discovery of this organ, the observations I have had an opportunity of making, in insane hospitals, as well as in society at large, have established the form and seat, which I have here given to it. They took us once to see a patient, whom they considered to be mad from pride ; but his loquacity, costume, gestures, proved that he was insane from vanity, not pride ; and we found that he had the two prominences, which I have mentioned as indicating the organ of vanity, and nothing of that, which indicates the organ of pride. I once examined, with Esquirol, at the Sulpêtrière, the head of a woman, who believed herself Queen of France. This head had precisely the same protuberances that I found at Vienna, on the head of a maniac that also believed herself the Queen of France, and whom I have mentioned in the history of the discovery of the organ of vanity.

I have often looked at apes with astonishment : I have previously spoken of their propensity for dress ; and persons, who have had an opportunity of observing a great number, will have remarked, with me, how very sensible they are to every kind of derision and mockery. When they are not of a species decidedly vicious, like the baboons and apes, whose head is flattened, but are like the orang-outangs and monkeys, with a considerably prominent forehead, I advance boldly towards them to caress them. Ordinarily, they receive me with the utmost mildness, and utter sounds of joy, tenderly embracing and kissing me. But if they perceive one mocking them, or unable to conceal a smile, they show their teeth, leap upon him, and bite and slap him with admirable agility. I have hardly been able to explain the conduct of these monkeys. They have the organ of vanity very distinctly shaped, like two segments of a sphere.

Objection.

"Can we conceive of an organ of vanity, which is concerned in the exercise of all the faculties, even in crime and cruelty, in robbers, banditti, and savages, in the most useful, as well as the most frivolous employments? In this age of events of every description, how many men have we seen, boasting of their ingratitude and treachery towards the authors of their fortune, to raise the idea of their importance in the world, where, as Boileau says, "A fool will always find a greater one to admire him." Vanity, like attention, reflection, imagination, and judgment, is an attribute common to many faculties. To assign to it a special organ, we shall have to attribute to it the functions of all the others, or maintain that we may boast of what we can neither have feeling nor thought of; since vanity may arise from every thing, and that, upon ultimate analysis, vanity is only the manifestation of a judgment, false or erroneous in some respects. It is never the failing of a judicious, circumspect mind, though it may be, of one of partial talents; because the combination of many faculties is requisite to awaken circumspection and rectify the judgment, but not for the exercise of particular talents or of mere genius. It needs some ingenuity to discover the points of resemblance, which determined Gall to confound, in the same organ, vanity and the instinct which leads animals to choose elevated places for their habitation; while in the human species, hauteur and meanness, are so often found by the side of each other, in the same head, as Voltaire has very strongly expressed it, in speaking of the great, who were going to the court at Versailles.

Ils s'en vont à la cour essayer des mépris
Qu' ils viennent aupalop nous rendre dans Paris.*

* They go to court, to endure the contempt, which they gallop back, to bestow on us in Paris.

“Gall, in his work, flatters many human weaknesses, and especially that of vanity, which he almost credits with the majority of our good deeds; while, in fact, based as it is upon egotism, it corrupts all the sources of good, or exposes it to ridicule. One thing, hard to conceive, in this combination in the same organ, of the physical instinct of height with vanity, is, that the vain are not always found living on the house-top, in high towers and on mountains, and that modest, rational people are found somewhere else besides in plains, at the base of mountains, in caves and ground-floors.”

Reply.

The last paragraph of this objection, where Demangeon makes an effort at wit, deserves no answer. He invariably confounds vanity, ambition, love of honor, and glory, with pride, loftiness of spirit, and the sentiment of elevation. Demangeon is probably the first moralist who has taught that ambition, love of glory, of fair fame, of great reputation, are not only barren of noble deeds, but that they even corrupt the sources of good. Demangeon thinks my ideas on the fundamental qualities and faculties of man, are not sufficiently pure to serve for the edifice of a new philosophy. Yet here he draws his arguments from this very philosophy; for the distinction I have established between the fundamental powers and their common attributes, constitutes its most essential part. I do indeed maintain, that the vain man is vain of every thing—of the beauty of his person, his achievements in running, of the strength of his limbs, of his feats in eating; yet does it follow from this, that vanity is an attribute of his beauty, feet, muscles, or stomach? In the same manner, too, the vain man is vain of his skill in stealing, of his courage in killing, of his birth, and of his fortune, without our being obliged to suppose that vanity is a common attribute of birth, fortune, &c., as attention, reflection, judgment, memory,

imagination are common attributes of the intellectual faculties. Though vanity is sometimes the accompaniment of mediocrity, it also is often found in acute, circumspect minds, and accompanies the most benevolent sentiments—which furnish just titles to vanity. Finally ; it appears, that the passage I cited from the work of C. G. Leroy, in treating of the natural history of pride, puts Demangeon in mind of Voltaire's verses, which prove that a vain and boasting valet-de-chambre preserves the faculty of crawling in the presence of his master.

X. Circumspection, Foresight, (Behutsamkeit, Vorsicht, Vorsechtigkeit.)

History of the Discovery.

At Vienna, I was acquainted with a prelate of excellent sense, and considerable intellect. Some persons had an aversion to him, because, through fear of compromising himself, he infused into his discourses interminable reflections, and delivered them with insupportable slowness. In conversation, it was very difficult to bring him to a conclusion. He was continually pausing in the middle of his sentences, and repeating the beginning of them two or three times before proceeding farther. A thousand times he exhausted my patience. Never, in his life, did he happen, by any accident, to give way to the natural flow of his ideas, but would constantly recur to what he had already said, and consult with himself whether he could not amend it in some point. He acted just as he talked. He prepared, with infinite precautions, for the most insignificant undertakings, and every connection was subjected to the most rigorous examination before forming it. This case alone, however, would not have arrested my attention ; but this prelate happened to be connected, in public affairs, with a Councillor of the Regency, whose eternal irresolution had procured for him the nickname of *Cacadubio*. At the

examinations of the public schools, these two individuals sat by the side of each other, and my seat was directly behind theirs ; so that I had an excellent opportunity of observing their heads. What particularly struck me was, that each head was very broad in the upper, lateral, and hind parts. This extraordinary breadth, coinciding with the peculiar character of these two men, whose qualities and faculties were very different, and who resembled each other, only in their circumspection, and in the conformation of their head, suggested to me the idea, that irresolution, indecision, and circumspection, might be connected with a large development of certain parts of the brain. In a very short time, my reflections on this quality, and the new facts that were presented, converted my presumptions into certainty.

Natural History of Circumspection in Man.

It was necessary that man and brutes should be endowed with a faculty to foresee certain events, to give them a presentiment of certain circumstances, and prompt them to provide against danger. Without such a disposition, they would have lived only for the present, and been incapable of taking any measures for the future. Still, this disposition has been very unequally dispensed to the different individuals of our species. In my own family, several of my brothers and sisters were, from infancy, excessively short-sighted and fickle ; while the rest, at an early age, evinced a remarkably cautious and considerate disposition. I have had opportunities of observing the same difference in my school-fellows, friends, and acquaintances, and I pursued my observations in a great number of families, of the highest and lowest condition. I invariably found two classes of persons ; one, obnoxious to the reproach of fickleness, short-sightedness, and want of circumspection ; and the other, having the credit of foresight, and of a firm, con-

siderate and circumspect character. People of the former class, are frequently of a gay, careless disposition, and engrossed entirely with the present; they yield themselves unreservedly to the impulses of feeling, adopt rash resolutions, and enter upon hazardous enterprises without deliberation or advice. In domestic life, inconveniences and even misfortunes are the consequence of their want of precaution. Here, they are hurting themselves against a table in the dark, or breaking plates and dishes, owing to the want of a little precaution, in arranging them; there, a child falls into the water while playing in the garden, because they have neglected to surround their ponds with a railing. They lose the money they lend, by omitting to take proper security; riding on a slippery path, quite insensible to the dangers around them, their horse falls, and they lose their lives. A rat or cat overturns the candle they have left burning, and sets their houses on fire. Let a general, thus organized, be active, ardent, and intrepid, and you will see him, like Pyrrhus, heedlessly exposing himself, as if he were the humblest soldier; or, a mere adventurer, engaging in his enterprise without any system, from mere heedlessness and want of reflection.

Persons of the second class are constantly on their guard; they know that it is more difficult to sustain than to acquire reputation, and, consequently, every new undertaking should be prosecuted with as much care as if they were making their first efforts for distinction. They anticipate all possible dangers, all the fortunate and unfortunate events in their enterprises; they ask advice of all, and then even are still undecided. They hold to the adage, that, of a hundred misfortunes that befall us, ninety-nine arise from our own fault. Such persons never break any thing, and they may pass their lives in pruning trees, or in working with edge-tools, without once cutting themselves. If they see a vessel placed near the edge of the table, their nerves shrink; large sums of money they are never guilty of losing. Finally, they are a standing subject of criticism to less

considerate people, who look on their forebodings as extravagant, and their precautions as trifling and absurd.

An excessive endowment of this quality in persons exposed to general observation, and surrounded by perilous circumstances, and tormented by distrust and suspicion, leads them to take a thousand precautions, surround themselves with guards, and carry their circumspection and suspicions so far as to hide away, to sleep in remote, inaccessible chambers, and constantly change them, like Aristippus, the tyrant of Argos, and Louis XI., a tyrant of France.

The general inference to be drawn, from the approximation of these two classes of characters, is, that they must, necessarily, be attributed to a primitive organization.

Circumspection in a state of Disease.

The numerous cases, where man is deranged in every thing relative to circumspection, while he enjoys perfect health and soundness in all his other moral and intellectual powers, prove, that it should be considered a fundamental quality, independent of the others. In Vienna, I attended two fathers of families, in easy circumstances, who, nevertheless, were tormented, night and day, with the apprehension that their wives and children would come to want. All my own, and their friends' assurances, were insufficient to persuade them that their fears were entirely chimerical; yet they were managing their affairs very nearly the same as before they were diseased. After recovery, they were afraid to hear their condition mentioned, through terror of a relapse. Before their malady, they were well known to be of a gloomy disposition, always looking on the dark side of things.

"Melancholy," says Pinel, "may depend upon a natural disposition, strengthened by age, and exasperated by the various circumstances of human life; but we of-

ten see persons, of a gay and lively character, fall into a state of dull moroseness, in consequence of some adversities, seek to be alone, and finally lose their appetite and sleep. They become more and more suspicious, and, in the end, imagine themselves constantly surrounded by snares and plots, contrived with the blackest perfidy. Some of those melancholic patients are so strongly impressed with the idea, that they are persecuted by invisible enemies, that they are in a state of constant anxiety, and, in the night, imagine they hear hollow sounds proceeding from secret machinations, whose victim they constantly think they are destined to be. One of them, who had formerly heard electricity spoken of, and had read some books on the subject, thought that her enemies, who were bent on killing her, could exert over her a deadly influence at great distances, and believed she could see electric currents, which threatened her with the greatest possible dangers. Other women see supernatural beings, whom their feeble imagination converts into reality, by attributing to them the most sinister intentions. A woman, about twenty-five years old, of a strong constitution, and married to a feeble, delicate man, suffered some severe hysterical attacks, and was subject to the most alarming nocturnal visions. She was fully convinced that a beggar, whom she had one day repulsed, and who had threatened to bewitch her, had really executed his terrible purpose. She imagined herself possessed by a demon, who assumed a variety of forms, and who, at one time, would sing like birds; at another, give utterance to most doleful sounds; and again, to piercing cries, that made her quake with terror. She remained several months in bed, unmoved by all the advice we could give her, and by all the consolations of friendship. The curate of the place, a man of enlightened understanding, and of mild and persuasive character, gained some ascendancy over her mind, and succeeded in making her leave her bed, and engage in domestic occupations, in digging her garden, and in other salutary kinds of bodily exercise. All this was fol-

lowed by the happiest effects, and a cure which lasted three years ; but at this period, the good curate died, and he was succeeded by a superstitious, narrow-minded ex-monk, who never doubted that she really was possessed of a devil. The consequences of such absurd prejudices, may easily be conjectured.”*

“A very distinguished military officer, after fifty years of active service in the cavalry, spent his latter years in a very different condition, in all the enjoyments of an easy, comfortable life, in an agreeable country. The organs of respiration and digestion soon felt the effects of this inactivity, in addition to the enfeeblement produced by age, and the result was a periodical and very abundant secretion of mucus. He became subject to various nervous affections, such as, spasms in his limbs, twitchings in his sleep, frightful dreams, and sometimes fits of heat in his feet and hands. The disorder soon extended to his moral powers, and he began by experiencing the most vivid emotions, from the most trifling causes. If, for example, he heard any disease spoken of, he immediately believed himself attacked with it. Was any one mentioned by his friends as deranged in mind, he imagined himself insane, and retired to his chamber full of melancholy thoughts and disquietudes ; every thing became for him a subject of fear and alarm. If he entered into a house, he was afraid the floor would fall, and precipitate him amidst its ruins. He could not pass a bridge without terror, unless impelled by a sense of honor for the purpose of fighting.”

“A very rich, middle-aged man,” continues Pinel, “became morose and subject to the most pusillanimous fears, so that he could scarcely get a few moments’ repose, not lying down till four or five o’clock in the morning. He passed the night in a state of constant fear ; imagined he heard a voice speaking in a low tone ; carefully shut his door ; a moment after, feared that he

* Pinel, op. cit. p. 115.

had not closed it tight, and continually returned, and continually discovered his mistake. Another idea took possession of his mind; he would rise from his bed to examine his papers; he would separate them one after another; collect them again; believe that he had forgotten something; and be afraid of the very dust on the furniture; he would evince the greatest instability in his thoughts and intentions; would wish and not wish; constantly tormented by suspicion and gloom; he even feared to breathe the external air, and always kept himself within doors.”*

“A young person, without any known cause, became gloomy and morose, and suspected all around her of wishing to poison her. The same fear followed her, after she had quit the paternal roof, and was staying with one of her aunts. Her suspicions were so strong, that she refused all kinds of nourishment.”†

I have elsewhere spoken of a very rich man, of distinguished talents, and perfectly sound in every other respect, who was plunged into the deepest despair, whenever the conversation turned on any topic connected with his fortune. He saw nothing but misfortunes and disasters; he often shed bitter tears, and thought of destroying himself. At the time of the entrance of Louis XVIII. into Paris, he had an air-gun in his house. Some wretch, he said to himself, may fire on the king; the crime will give rise to domiciliary visits; they will find the gun in my house; and will believe me the author of the deed. He broke the weapon in pieces, and threw it away. Still new perplexities arose. Some years hence, in clearing out the dirt, they will find these broken bits; all the accidents that have taken place, all the crimes that have been committed, by means of air-guns, will be imputed to me. He could rest no longer till he had collected all the pieces he had thrown away. Subsequently, he broke up his pocket-pistols, enveloped

* Pinel, *op. cit.* p. 293.

† Pinel, *op. cit.* p. 294.

the fragments in some paper, and went and threw them into a remote street. Still more troubles. Might not my address be written on this paper? If they find it, what horrible suspicions will be excited against me!

Seat and external appearance of the organ of Circumspection.

The convolutions marked x., pl. viii., pl. ix., pl. x., constitute the surface or final expansion of this organ, on the two hemispheres of the brain. A large development of these convolutions, raises the superior-posterior outer portion of the parietal bone into a lateral prominence, so that, to the eye, or the touch, the head presents a very broad surface in its superior-posterior lateral region. On the contrary, the head will be very narrow in this region, when the organ is little or moderately developed. This last shape is met with in inconsiderate, precipitate, heedless men, and very generally in beggars and people who voluntarily engage in doubtful enterprises. Compare pl. lxxv., a type of circumspection, with pl. lxxvi., a model of heedlessness.

Let those who are desirous of ascertaining the meaning of this form of the head, look with an observing eye into families, schools, and society. Whenever they meet with these two different forms of organization, and obtain information relative to the circumspection of these persons, they will find my discovery confirmed.

In Vienna, I was the physician of two bankers, who had the reputation of managing their affairs with extreme circumspection; they never, in fact, engaged in a commercial operation, without exposing and considering every possible chance. Both had the region of the head in question very broad. They were also capable of giving excellent counsel, as I have always observed of men endowed with a favorable development of this organ. These two men contributed very much to fix my attention on this organization, and the disposition

resulting from it. Since that, when examining men engaged in extensive business, I have always been favorably impressed with their talents, when I saw this organ well developed. Excepting those urgent cases, where a bold stroke is necessary, the results of their labors will bear the mark of precaution and foresight. Although they may be sometimes slow in the execution, still their plans are based on a broad and permanent foundation; while the opposite organization often accomplishes wonders which soon come to nothing, because the inconsiderate man has not even a presentiment of the caprices of fortune.

I have generally found but a small development of the organ of circumspection in military men, who have no other merit than that of performing coups de main, and who are only excellent partizans. In all military leaders, on the contrary, who acquired the renown of great generals, by actions that were deliberately and cautiously prepared for, and performed with coolness, I have observed the head broad and square at its upper and posterior region.

For the same reason, the serpent is the symbol of the art of medicine. It is possible to be a good operator without remarkable circumspection; but I have never yet met with a really skilful and successful practitioner without a very marked endowment of this quality. On the other hand, patients thus endowed, would frequently weary the physician's patience, if he was not aware of the source of their eternal disquietude. For the most trifling indisposition, how many questions are asked, and questions too always the same! for the slightest accident, how many sinister prognostications are entertained! Does the physician call often? "Bad sign that." Does he not call often? "See how he leaves his poor patient to suffer and die." Does the physician listen to his complaints with a serious air? He draws from it the most fatal horoscope. Does he appear calm, and rather anxious to leave? They charge him with inattention and indifference. Such patients are generally furnished

with too strong a dose of circumspection, unless the absolute want of all occupation fixes their whole attention on the state of their health. I was inquired of, relative to a young woman. As her hair was thin, I could perceive without any previous examination, that her organ of circumspection was very large; I therefore said, that she was circumspect and prudent to an excessive degree. Instantly, her mother began mentioning so many facts corroborative of my opinion, that I thought she would never be done. If the young lady coughed a little—"O, she was dying of a disease of the chest!" If her eyes happened to smart—"she was going to be blind, and one day, instead of being a support to her mother, she should only be a charge. Who would take care of her unfortunate mother in her old age?" If a payment is not made—"how shall we live; we must sell every thing, borrow money, the interest will absorb our income, and we shall finally die in the most miserable condition."

The two patients, who, though in easy circumstances, were afraid of dying of hunger, had both an extremely broad head. The patient who broke up his air-gun and pistols, had not only a very broad head, but on each parietal bone, a prominence projecting out like the segment of a sphere, denoting an extraordinary development of the subjacent cerebral part. Most melancholic patients present this organization, which, in good health, however, is not prejudicial to calmness and contentment of mind. As these two patients, before they were cured, were singularly tormented by a propensity to suicide, and as the third whom I never could cure, is still often on the point of throwing himself out of the window, I will add some remarks on one of the causes of relapses, or periodicity. This examination will be so much the more interesting, inasmuch as it will explain many phenomena, that are as common in health, as in disease, and particularly in mental alienations.

Some additional Considerations on Suicide, and on one of the Causes of its Relapses and its Periodicity.

I have already spoken of suicide, simple and complicated, while treating of innate dispositions. The faithful picture which I there drew from repeated observations, must have given to readers a very different idea of the matter from that too generally entertained. It is pretended, that they are particularly susceptible of melancholy attacks who know not how to connect useful occupations with those that are calculated merely for pleasure ; who are solely devoted to sensual gratifications ; who, by reason of their own emptiness, cannot live within themselves ; and who, after exhausting every kind of enjoyment, die of ennui, for want of fresh aliment. Exposed to this disease too, it is also added, and much more so perhaps than any others, are those young men of a warm and exalted imagination, and a romantic turn of mind, filled with those wild illusions which some philosophers and novelists have been pleased to represent as realities. Carried away with this ideal happiness, they search every where for it ; and, after trying in vain to find it, and being disabused of their chimerical fancies, life becomes insupportable.

Undoubtedly, every thing that produces a distaste for life, or reduces a man to extreme despair, may become a cause of suicide. Loss of fortune, or of honor ; the prospect of a cruel or ignominious death ; the destruction of domestic happiness, jealousy, inability to obtain revenge, which turns one's own wrath against himself ; want of strength to support physical or moral ills, accompanied with the belief of annihilation after death, or of a happier future ; sometimes even the contagion of other examples of suicide ; very often a miserable hereditary constitution, and many other circumstances, may determine an individual to take away his own life. A complete treatise on suicide, therefore, under all its re-

lations, would require a work on purpose, and necessarily lead to numerous physiological, pathological and moral discussions.* I must limit myself to some reflections, upon that kind of suicide which is the sequel of disease of a particular mental alienation, which is itself most often the result of organization,—of a particular disposition.

I have demonstrated that, often in a state of health, a super-irritation, or even an excessive degree of the natural activity of the organ of circumspection, leads to pusillanimity, indecision, ennui, disquiet, discontent, &c. Is it astonishing, then, that in case of general indisposition of super-irritation, or peculiar nervous excitability, the organ of circumspection should perform its part in the fulness of its vigor, fill the patient's mind with sinister forebodings, and represent the earth as the abode of desolation ; finally, that it should engender the propensity to self-destruction ?

The state of the disease as I have depicted it, (vol. i.) and which ordinarily precedes this kind of suicide, is alone sufficient to prove that the organ of circumspection is at its very highest degree of excitement, and that it, finally, interferes with the action of the other cerebral parts. I have a list of eleven hundred and eighty individuals, who killed themselves between 1784, and 1798, in the Saxon states, without including Upper and Lower Lusatia. Of this number, five hundred and twenty-six were melancholic, presenting manifest signs of a gloomy, anxious temper. What are we to think of the moral condition of the most of the rest ? How often has this treacherous disease been acting silently, and how often have its symptoms been overlooked. They whom I have attended, though apparently in health, were all, timid, suspicious, morose, melancholic, and sometimes, though rarely, a prey to excessive gaiety. Some,

* Since the publication of my large work, this labor has been performed by M. Falret, pupil of M. Esquirol, on *Hypochondria* and *Suicide*. 1822, Paris.

by their petty disquiets, were the annoyance of all around them: they imagined that every body despised them; complained continually that they were neglected, or treated unjustly; while many looked as usual, and disdained to communicate their desperate situation to others. This unquiet temper, extravagant whims, and treacherous silence, ordinarily characterise the most dangerous cases, and, at the same time, reveal to the friends a knowledge of their unfortunate condition. Even after the fatal blow has been given, we are still asked, where they are not familiar with this singular partial alienation, whether the suicide is not rather the result of some immorality, than of a derangement of the mental faculties. Against this latter opinion, they will bring forward the preparations begun long before; the manner in which they eluded the attention or surveillance of their friends; the rational, well-planned measures for accomplishing their purpose; the sudden execution of their project, oftentimes directly after some kind of recreation, in which they seemed to take quite an active part,—and testamentary dispositions, made with a full knowledge of the cause, &c. &c.

The causes ordinarily charged with determining suicide, are only occasional; the storm has been brewing long before. Jealousy, unsuccessful love, loss of property, the clamors of creditors, the tortures of conscience, and all other motives, have, generally speaking, only given the last thrust at an edifice, whose ruin has been long impending. Besides the melancholic cases cited above, where there was a violent impulse to self-destruction, and when the organ of circumspection was very large, I recollect some other examples. The woman, for instance, who tried so often to take away life, and who had strength of religious principle enough to throw away from her, the key of the bed-chamber of her husband and children, and thus deprive herself of the power of hurting them; the young lady, seventeen years old, beautiful, rich, well educated, and on the eve of a brilliant marriage, but always melancholic, and complain-

ing, for a long while before, of an obstinate pain in the middle of her forehead, always appearing to be discontented with her lot, and always protesting that she was very happy, and who finally went up into the fifth story of the house, and precipitated herself upon the pavement, without her design being even suspected; and eight other self-destroyers, whose skulls are in my cabinet, soldiers, young women, artisans, clerks, &c. In all these, there is a large development of the organ of circumspection, producing a very distinct prominence in the above-mentioned region. At this moment I know a very well-informed, well-educated young lady, who, when only four or six years old, thought of destroying herself, whenever her parents shut her up to punish her. She was always expecting to die. To be loved, or to have friends, appeared to her to be a great misfortune, since her approaching death would soon separate her from them. She had the organ of circumspection very large.

This ought to be sufficient to explode the too common idea, that suicide is oftener an act of cowardice, or courage, or heroism, or inconsiderateness, or corrupt manners, or total forgetfulness of duty towards God and man. On the contrary, the result of these observations is, that a disordered and exalted activity of circumspection must be reckoned among the most powerful and frequent causes of melancholy, and particularly of that kind which determines the propensity to suicide.

Undoubtedly, we shall meet with heads of those who have been led to commit suicide by mental alienation, in which there is but a moderate development of the organ of circumspection; but it does not follow, that this may not have been painfully affected. The manner in which other parts of the body are organized, generally enables us to see to what diseases they are predisposed; still, we know, that a certain combination of circumstances may act upon these parts in a sense entirely contrary to the natural disposition. The haughty man, in whom the organ of pride greatly predominates

over all the rest, will, in case of partial alienation, dwell on ideas relative to pride, rather than to any other sentiment. I have mentioned some patients of this kind, who, in the intervals, or when in health, were models of submission and modesty. Have I not also mentioned many cases of persons, who, in a fit of insanity, or drunkenness, or fever, would make verses though previously they had not the least suspicion of possessing such a talent?

I am well aware, that the theory which fixes the origin of melancholy in a disorder of the organ of circumspection, appears to be a gross extravagance to those who, in their study of mental derangements, follow the old routine. Indeed, how could they attribute any partial alienation whatever, to a cerebral part, while they deny that the moral qualities and faculties are the proper functions of these same cerebral parts? And since they do not yet know what partial mental alienation is, how could they have any precise ideas of suicidal melancholy, or propensity to suicide, which is the most imperious, while no derangement is observed in the other qualities and faculties? But since I have demonstrated, that each fundamental quality or faculty is necessarily connected with a particular organ, and that all mental alienations have their immediate seat in the brain; since, in this volume, I have traced the partial alienations of the affective qualities to their respective organs,*—erotic mania to the organ of propagation; a quarrelsome, vicious disposition, to the organ of self-defence; the murdering impulse, to the carnivorous instinct, and so on with the rest,—it may now be easily conceived, that melancholy or distaste for life also, and finally the propensity to suicide, originates in a particular organ.

Considering this as established, I now ask, with what

* At the end of the exposition of the fundamental powers, I shall answer the objections to the doctrine, that partial alienations are owing to derangement of particular cerebral parts.

organ we can reasonably connect the propensity to suicide? It certainly is among the number of the propensities or sentiments. Would you confound these unfortunate people with those who have been made mad by pleasure, or pride, or vanity? Would you refer the propensity to suicide, and those to theft, to quarreling, and to cheating, which have become involuntary and irresistible by alienation, all to the same origin? Would you explain this propensity on the theory of a total derangement of the brain, of a universal commotion of the affective qualities? How then can you conceive of the soundness of many of these same qualities at the same time, which is a matter of daily experience? True, it is with this partial madness, as with every other kind. After existing a long time in the germ, the whole brain begins to suffer; the derangement of all the functions is more and more perceptible, and, finally, the organic lesions that are successively produced, become general. This was proved in the third volume, while treating of the influence of the brain on the form and texture of the cranial bones in disease. After all these reasons, which are founded no less on observation, than on general theory, we are obliged to admit, that the propensity to suicide, when the effect of disease, has its source in the organ of circumspection.

The question now comes up, which of the two sexes must be charged with most readily yielding to the fatal propensity to suicide. Women, in point of intellect, are ordinarily inferior to men; they are endowed with more excitability and sensibility, and they are also, often than men, the victims of bad treatment and desertion, a prey to jealousy and wretchedness. Still, the number of suicides is generally much greater among men than women. In 1805, one hundred and sixty-four men, and twenty-four women, committed suicide, in Paris. In 1806, over one hundred and twenty men, and forty women; in 1807, over ninety-eight men, and forty-nine women, making one hundred and thirteen women, and three hundred and eighty-two men, within the space of three

years. In ninety-five cases of suicide in Boston, or near that city, nineteen only, were of women. On the frontiers of Brandenburgh, out of forty-five voluntary deaths, thirty-two were of men, and thirteen of women. Brosson fixes the proportion of men to women, relative to suicide, as five to one. According to the observations of Esquirol and Falret, the propensity to suicide is very nearly three times more frequent in men than in women. But the mere census of cases of suicide, though carefully made, is hardly capable, in any respect, of giving a just idea of the natural history of suicide. It is always very difficult, and frequently impossible, unless the patients have been attended by physicians, to obtain exact information respecting the moral condition of people who put an end to their existence. We wish to know, in how many the suicide was the sequel of a mental malady, of the alienation in question? in how many, it was determined suddenly by momentary despair? and finally, in how many, it would be right to attribute it to a deliberate and culpable immorality?

Circumstances being equal, even in case of organic disposition, women seem to overcome this terrible propensity oftener than men. I know many families, where the propensity to suicide is hereditary, and, almost always, the number of suicidal men exceeds that of women. There is even now a family in Vienna, in which two brothers blew out their brains, many years ago. The three sisters, all married, and mothers of many children, have hitherto resisted, though excessively agitated at their monthly periods, and even during pregnancy. At those same periods, they feel it absolutely necessary that they should be watched till some days after, when they are freed from all temptation. In another family, the grandfather, father, and son have committed suicide, while there is only one sister of the last, that has made a single attempt. Are women less impatient under their troubles—more accustomed to suffer and be resigned? Are they oftener restrained by religious principles, or by regard for their children? Or, are they less

subject to attacks of this malady than men ; and if so, from what reason ? I doubt whether it can be attributed to feebleness of constitution, to mildness of disposition, or their timidity ; for their feebleness of constitution would rather induce them to yield, than to resist ; and we can hardly allow so much to their mildness and timidity.

Spring appears to exert a more fatal influence on this propensity, than winter. There are certain constitutions of time, that determine it and render it epidemic, —a fact well known to every physician ; but every body does not observe, that this material cause must not be confounded with other external causes of a purely moral description.

We know also, that the propensity to suicide is transmitted from parents to children. In this case, the cause is as material and as little to do with the will, as if it were an accidental disease. The *Sieur Ganthier*, the owner of various houses, built without the barriers of Paris, to be used as entrepots of goods, left seven children, and a fortune of about two millions to be divided among them. All remained at Paris, or in the neighborhood, and preserved their patrimony ; some even increased it by commercial speculations. None of them met with any real misfortunes, but all enjoyed good health, a competency, and general esteem. All, however, were possessed with the rage for suicide, and all seven succumbed to it within the space of thirty or forty years. Some hanged, some drowned themselves, and others blew out their brains. One of the two first had invited sixteen persons to dine with him one Sunday. The company collected, the dinner was served, and the guests were at the table. The master of the house was called, but did not answer,—he was found hanging in the garret. Scarcely an hour before, he had been quietly giving orders to the servants, and chatting with his friends. The last, the owner of a house in the *rue de Richelieu*, having raised his house two stories, became frightened at the expense, imagined himself ruined, and was anx-

ious to kill himself. Thrice they prevented him, but soon after found him dead, shot by a pistol. The estate, after all the debts were paid, amounted to three hundred thousand francs; and he might have been forty-five years old at the time of his death.

In the family of M. N***, the great-grandfather, the grandfather, and the father committed suicide.

In another family, the grandmother, her sister, and the mother, put an end to their lives. The daughter of the last has been on the point of jumping from the window, and the son hanged himself.

Examples of this fatal hereditary disposition are not rare. As in gout, the grandfather, grandson, and great-grandson may suffer horribly from it, while the son will not experience the slightest attack.

"An astonishing and terrible circumstance of suicidal melancholy," says Falret, page 6, "is, that of all kinds of madness, it is most susceptible of hereditary transmission. I have witnessed a great many times the fatal effects of this predisposition. I saw, at the Salpêtrière, a girl who made three attempts to drown herself; her sister was drowned some years before. I saw a mother, and grand-daughter attacked with the suicidal melancholy, and the grandmother of the latter, is at Charenton, for the same cause. Among the patients of a higher class, I have seen an uncle and niece, a mother and daughter affected with this same disease.

"An individual committed suicide in a house in Paris; his brother, who came to assist at his funeral, cried out, on seeing the body—'What fatality! My father and uncle both destroyed themselves; my brother has imitated their example; and twenty times, during my journey hither, I thought of throwing myself into the Seine.'

"A similar confession was made by a young officer, who came to see his brother, laboring under melancholy with distaste of life.

"Rush, in his work, on 'Diseases of the Mind,' relates a very remarkable case of this kind.

"Captains C. L. and J. L. were twin brothers, and so

great was the similarity in their countenances and appearance, that it was extremely difficult for strangers to know them apart. Even their friends were often deceived by them. Their habits and manners were likewise similar. Many ludicrous stories are told of people mistaking one for the other.

“They both entered the American revolutionary army at the same time. Both held similar commissions, and both served with honor during the war. They were cheerful, sociable, and in every respect gentlemen. They were happy in their families, having amiable wives and children, and they were both independent in their property. Some time after the close of the war, captain J. removed to the state of Vermont, while captain C. remained in Greenfield, in the vicinity of Deerfield, and two hundred miles from his brother. Within the course of three years, they have both been subject to turns of partial derangement, but by no means rising into mania, nor sinking into melancholy. They appeared to be hurried and confused in their manners, but were constantly able to attend to their business. About two years ago, captain J., on his return from the general assembly of Vermont, of which he was a member, was found in his chamber, early in the morning, with his throat cut, by his own hand, from ear to ear, shortly after which he expired. He had been melancholy a few days previous to this fatal catastrophe, and had complained of indisposition the evening previous to the event.

“About ten days ago, captain C., of Greenfield, discovered signs of melancholy, and expressed a fear that he should destroy himself. Early in the morning of June 5th, he got up, and proposed to his wife to take a ride with him. He shaved himself as usual, wiped his razor, and stepped into an adjoining room, as his wife supposed, to put it up. Shortly after she heard a noise, like water or blood running upon the floor. She hurried into the room, but was too late to save him. He had cut his throat with his razor, and soon afterwards expired.

"The mother of these two gentlemen, an aged lady, and their two sisters; the only survivors of their family, have been subject, for several years, to the same complaint."

"Voltaire, in his *Questions Philosophiques*, speaks of a man of serious turn, mature age, and regular demeanor, who killed himself Oct. 7th, 1769; his father and his brother having committed suicide at the same age as his.

"The following case, which I have compiled from documents, used by Professor Lordat in his account of Barther's doctrines, is well calculated to show the influence of hereditary predisposition, in the production of ennui and distaste of life.

The celebrated Barther, whose life was devoted to study, and to the preservation of an ambitious career, was not happy in his old age, though possessing all the elements of happiness. His difficult temper, which was a perfect torment to all who served him, rendered him a burden to himself. He employed all the resources of his mind, in making himself miserable. One day, when he was complaining of the dog's life he led, M. Lordat, his friend and pupil, then a distinguished Professor in the school at Montpellier, reminded him of his reasons for being thankful for his lot. True, he replied; but my disposition destroys it all. If he had a letter to write, there was no rest till it was done; and if the impress of the seal were not perfectly clear and neat, a half day's uneasiness was the result. Will it be believed, that while his *Discours du génie d' Hippocrate*, was printing, he passed a whole night of sleeplessness and vexation, because, after the first sheet was worked off, he discovered, that, in the first *e*, of the word *Genie*, in the frontispiece, the upper horizontal line was broken. What tormented him, however, more than any thing else, was, every thing that seemed calculated to dim the lustre of his glory. He became more and more irritable, jealous, and mistrustful; and concerned himself in all his household affairs. In 1804, he lost his house-keeper, who had served him more than forty years, and was enthu-

siastically attached to him. Her death made him feel extremely desolate. Among his papers, was found one of a sad but touching nature, which he had written for the purpose of alleviating the pain caused by the loss of Mary. One year after her death, this great physician observed, with tears in his eyes, that he had no wish to imitate the courage of his father, who, at ninety years of age, starved himself to death, in consequence of losing his second wife.

History of a whole Family, that committed Suicide.

M. M * * *, dyer, of sound parents, but of a very taciturn humor, was married to a healthy woman, and had five sons and a daughter. The eldest of the sons established himself in business at Montauban, was married, and had children. His family and associates, knowing that he had made many attempts to kill himself, kept watch over him; but, at last, he threw himself from the third story into the barn-yard, and was killed on the spot. He was forty years old; his manners were pleasing, his business prosperous, and melancholy disposition seemed to be the only cause of his tragical end. The second son, who was of a sanguine-bilious temperament, and rather taciturn, was also in business. He married, had some domestic trouble, and was accounted jealous. He lost part of his fortune at play, and strangled himself in his store, at thirty-five years of age. The third, of a bilious temperament, threw himself from the window into his garden, but did not injure himself; he said he was trying to fly. The fourth, tried one day to fire a pistol down his throat, but was prevented. The fifth, is of a bilious, melancholic temperament, very quiet and devoted to business. The sister, who is married, and has children, shows no sign which would lead us to suspect the existence of her brother's malady; but one of her cousins has committed suicide. He was of a bilious temperament, and had domestic troubles; his

wife often reproached him with losing money at play. One morning he left home, walked several hours on the banks of the Lot, and finally jumped into the river."

Let me offer one reflection, relative to certain irresistible propensities. I have already shown, several times, that this irresistibility often occurs when the other qualities or faculties are sound, and then it constitutes a real partial mania. If such an irresistible impulse often accompanies the manifestation of a propensity, which threatens and accomplishes the death of the individual, how can we refuse to acknowledge a similar irresistibility in regard to other propensities? Has the cause of morality so little intrinsic worth, that we are obliged to call in the aid of falsehood and error, to render it pleasing to men? When will these hypocritical declaimers cease to confound the deplorable effects of insanity with crime?

On the Causes of the Periodicity of certain Pathological Phenomena. particularly Mental Alienations, and Suicidal Melancholy.

The propensity to suicide, like other alienations, is under the influence of a periodicity, which renders a knowledge of its true conditions, in many cases, singularly doubtful, and the result of treatment always very uncertain. The patient may present signs of a perfect cure; he no longer evinces any of that jealous mistrust, those imaginary fears, or gloomy temper; on the contrary, he appears to participate in the enjoyments of life, and acknowledges the former derangement of his thoughts and feelings; when, suddenly, this treacherous propensity breaks out afresh, with redoubled force, and impels him to his own destruction.

We know, that one of the most powerful and frequent causes of these relapses, is the return of certain seasons.

Another, no less powerful cause, is the period of menstruation; and I now proceed to speak of this great phe-

nomenon in the human constitution. After so many labors on the part of physiologists, who would believe, that it could still become the object of new observations of the highest interest to medicine, morality, and jurisprudence?

Toutes les femmes bien constituées sont, en général, sujettes dans l'espace de vingt-huit jours, à leur évacuation critique, qui dure avec plus ou moins d'abondance, un jour, deux jours, le plus souvent trois à cinq jours, et chez quelques-unes huit jours. Comme les mois sont composés de trente à trente-un jours, et que l'ensemble de la menstruation et des jours libres comprend une période de vingt-huit jours seulement, il s'ensuit que l'époque de chaque menstruation doit avancer, chaque mois, de deux à trois jours, et que les femmes sont réglées, dans une année, treize fois. Beaucoup de femmes vous disent que leurs règles reparaissent toujours à la même date du mois. Si cela arrive quelquefois de suite, la nature reprend bientôt ses droits, et le dérangement sera d'autant plus grand. D'autres femmes, quand elles s'aperçoivent de la différence de ces deux ou trois jours, se plaignent qu'elles sont réglées deux ou trois jours trop tôt. Un petit nombre de femmes savent qu'il faut compter les quatre semaines, y compris les jours de la menstruation. Ainsi les femmes auxquelles les règles durent huit jours, quoique trois semaines après la cessation elles recommencent, ont également les règles dans l'intervalle de vingt-huit jours. Comme je n'ai pas l'intention de faire un traité complet sur la menstruation, je passe les irrégularités qui ont lieu dans les femmes, soit trop faibles, soit trop fortes, ou par suite d'événemens accidentels.

Mais je demande : Les femmes sont-elles réglées indifféremment dans tous les temps, ou sont-elles sous l'influence d'une loi déterminée ? Et les hommes sont-ils privilégiés de la nature, et exempts de toute évacuation critique dans l'état habituel de santé ; ou sont-ils sous l'influence de la même loi générale ? Voici ce que j'ai observé relativement à ces questions.

Exerçant la médecine à Vienne, je me suis bientôt aperçu que pendant un certain laps de temps, presque aucune femme n'était réglée, et que dans un autre temps un grand nombre l'étaient à-la-fois. Comme cette circonstance se présenta très souvent, elle dut nécessairement frapper mon attention, et me faire naître l'idée que cette espèce d'évacuation périodique pourrait bien être subordonnée à une loi déterminée. Je tins un journal où je marquai les époques d'un nombre considérable de femmes pendant plusieurs années. Le résultat fut que les femmes sont divisées en deux grandes classes. Chaque grande classe a une période différente pour la menstruation. Les femmes de la même classe sont toutes réglées dans un espace de huit jours. Ces huit jours passés, suit un intervalle de dix à douze jours, où l'on ne rencontre que très peu de femmes réglées. Après ces dix jours commence l'époque assignée à la seconde grande classe, dont tous les individus seront réglés dans l'espace aussi de huit jours. Supposons qu'une femme de cette classe commence à être réglée le premier du mois, elle aura fini le 8, en cas que ses règles lui durent huit jours. Une autre, dont les règles ne durent que trois jours, aura fini le 3 ; ou en cas qu'elle n'ait commencé que le 5 du mois, elle aura également fini le 8, et ainsi des autres, de manière que les femmes, tant qu'elles sont dans un état régulier de santé, ont vingt-un, ou vingt-cinq, ou vingt-six jours d'intervalle. Voici, telles qu'elles ont eu lieu, les époques de deux femmes, dont chacune appartient à une classe différente : 1818, janvier 19, 3 ; février 16, 1, 29 ; mars 14, 28 ; avril 10, 25 ; mai 8, 23 ; juin 5, 30, 19 ; juillet 26, 17 ; août 21, 13 ; septembre 18, 9 ; octobre 16, 8 ; novembre 14, 5 ; décembre 12, 2. On voit que chacune a été réglée treize fois ; et que celle qui avait commencé le 3 janvier, le sera, pour la quatorzième fois, au dernier de décembre.

Il y a toujours des femmes qui, pour causes accidentelles, sont réglées hors de ces deux grandes périodes ; mais après un ou deux mois, elles rentrent ordinairement

dans la classe à laquelle elles appartiennent. Les femmes valétudinaires, les jeunes personnes qui ne sont pas encore tout-à-fait formées, les femmes qui sont sur leur retour sont le plus sujettes à ces irrégularités.

Si les règles ont été suspendues, soit par une maladie, soit par la grossesse, ou par l'allaitement, elles reparaisent à la même époque où la femme aurait été réglée, si elle eût toujours continué de l'être. Quand, chez certaines femmes, surtout chez celles qui sont sur le point de perdre, les règles continuent pendant plusieurs semaines, elles deviennent toujours plus abondantes au temps de l'époque accoutumée.

Pourquoi toutes les femmes sont-elles rangées, pour leurs règles, en deux classes, et pourquoi telle femme appartient-elle à cette classe, et telle autre à l'autre classe? Je n'ai pu acquérir encore à ce sujet le moindre éclaircissement. Les filles et les mères, les sœurs, les brunes et les blondes, les délicates et celles qui sont fortement constituées, sont pêle-mêle du nombre de l'une et de l'autre grande division.

Pendant mes voyages, j'ai continué mon journal ; et ce qui m'a le plus frappé, c'est que les deux époques coïncident dans tous les pays, au moins en Europe. A la même époque où les femmes étaient réglées à Vienne, à Berlin, à Hambourg, à Amsterdam, elles l'étaient aussi à Berne, à Copenhague, à Paris, etc. Et ce qui me fait croire que c'est le même cas pour toute la terre, c'est que les espèces de singes qui sont sujettes à cet écoulement périodique, le sont en même temps que les femmes.

Par conséquent, la cause de l'époque de la menstruation n'existe pas dans l'individu ; elle est universelle ; c'est une loi de la nature qui gouverne tous les êtres subordonnés à ce phénomène. La lune n'y est pour rien : car, dans cette supposition, comment les deux grandes époques pourraient elles avoir lieu ? Les époques elles-mêmes coïncident avec toutes les phases de la lune. Souvent, au printemps, toutes les femmes avancent tout d'un coup ; à l'automne, souvent elles retardent de même

de quelques jours encore par une influence générale, tandis que chacune accuse pour son compte une cause particulière.

Voyons maintenant jusqu'à quel point les hommes sont sous l'empire de la même loi. Les hommes aussi sont sujets à un dérangement critique, qui coïncide toujours avec l'époque de la menstruation des femmes. Les individus jeunes et robustes ne s'en aperçoivent pas facilement, à moins qu'ils ne s'observant avec une attention particulière. Mais les hommes d'une constitution faible, fatigués par des souffrances habituelles ou par des maladies, ou doués d'une grande irritabilité, ou ceux qui ont passé l'âge de la vigueur, éprouvent dans l'espace de quatre semaines, pendant un, deux, trois jours, un certain malaise dont ils ne sauraient se rendre compte : ils sont enclins à une espèce de mélancolie, de mécontentement ; ils sont de mauvaise humeur, peu dispos au travail ; les idées naissent et se coordonnent difficilement ; le teint devient terne, l'haleine forte ; quelquefois les urines se troublent, la digestion se fait plus difficilement. Ceux qui sont tourmentés par les hémorrhoides, le sont davantage, ou seulement dans cette même époque. Tous ces accidens disparaissent après un, deux, trois jours, sans qu'on y ait contribué en la moindre chose.

Je serais tenté de conclure de ce fait, que l'évacuation menstruelle, chez les femmes, n'a pas seulement pour but de les préparer à la conception, mais aussi de les débarrasser de certaines humeurs hétérogènes, qui s'accumulent pendant l'espace de quatre semaines. Cette idée reçoit un degré de plus de probabilité par l'observation de M. Frédéric Cuvier. Ce savant naturaliste s'est aperçu que les femelles des animaux, au Jardin du Roi, éprouvent tous les mois, pendant quelques jours, une certaine effervescence, une évacuation critique par les parties sexuelles, quoiqu'elles n'entrent pas assez en chaleur pour désirer ou pour admettre le mâle. Il trouve cette découverte confirmée depuis plusieurs années. Je ne sais pas si ces fausses chaleurs des fe-

nelles de ces animaux sont aussi en rapport avec la menstruation des femmes et des singes femelles.

Quel avantage résulte-t-il de ces observations pour le médecin, pour le moraliste et pour le jurisconsulte?

L'accouchement a ordinairement lieu pendant les jours où la femme serait réglée pour la dixième fois, s'il n'y avait pas eu d'interruption. Les accoucheurs ont toujours observé que, dans certains temps du mois, les accouchemens sont très fréquens, tandis que dans d'autres temps ils sont rares.

Les fausses-couches ne sont guère à craindre que pendant le terme d'une époque. C'est alors qu'au moindre indice il faut employer tous les moyens pour les prévenir. Il est entendu qu'une violence quelconque peut faire exception à cette règle.

C'est encore à cette même époque que les femmes enceintes souffrent plus qu'à l'ordinaire, des inconvéniens de la grossesse. Les malaises, les maux de tête, les maux de reins, les étouffemens, la pesanteur, les chaleurs, accompagnés de fièvre, toutes sortes de mouvemens nerveux, les fleurs blanches, etc., etc., sont autant d'accidens qui, laissés à la nature seule, disparaissent après le temps accoutumé de la menstruation, pour se renouveler à une époque suivante. Ce sont ces mêmes symptômes qui en imposent si souvent aux médecins et aux jeunes femmes sans expérience. On veut intervenir, par toutes sortes de moyens; par des saignées, par des sangsues; on ordonne de soidisant calmans; et on se flatte d'avoir opéré le soulagement, qui n'est dû qu'à la nature. Outre qu'on se verrait dans la nécessité de répéter, presque à chaque époque, la même traitement, on déranger l'ordre naturel de la grossesse, on prive l'enfant de la partie la plus substantielle de sa nourriture, on affaiblit la mère, on la dispose aux pertes de sang et aux fausses-couches.

Je suis appelé auprès d'une jeune personne ou d'une femme, qui a des attaques de nerfs bien plus fortes que de coutume; qui crache du sang avec une grande agitation, sans qu'antérieurement il se soit manifesté aucune

trace de maladie des poumons. Je sais, d'après mon journal, que c'est l'instant où l'une grandes époques va commencer, et je rassure ma malade ; je lui présage la prochaine éruption de ses règles ; et demain, ou après-demain, ma prédiction se trouve accomplie.

Les règles ont été supprimées par une cause quelconque. Les maux qui en résultent deviennent urgens ; on pallie, tant que les circonstances le permettent, par des calmans, des saignées, les sangsues, des bains, etc. ; mais on n'obtient pas le retour des règles. Le médecin observateur qui s'est familiarisé avec la marche régulière de la nature, sait que tous les moyens tentés à contre-temps restent sans effets ; il sait qu'il ne pourra réussir que quand la nature elle-même réunira ses efforts à ceux du médecin. Il attend l'approche de la grande époque, à laquelle sa malade appartient ; et il obtient, par des moyens très simples et très doux, ce que plutôt, il n'aurait pu obtenir en employant les moyens les plus actifs.

C'est aussi à ces mêmes époques que l'irritabilité, l'excitabilité, la sensibilité des femmes et des hommes, sont infiniment plus actives et plus exaltées que dans l'état de santé. Les uns et les autres, à l'approche de cette évacuation critique, sont susceptibles à l'excès. De là, des scènes et des querelles domestiques, les souvenirs les plus fâcheux, les caprices les plus inexplicables, etc. Il faut être philosophe, ou connaître à fond la cause matérielle de cette conduite extraordinaire, en prévoir la fin prochaine, pour la supporter avec une charitable patience.

Maintenant, je puis me faire entendre sur cette question importante : Pourquoi certaines causes de maladie, mêmes des causes organiques, persistent-elles souvent, sans produire aucun mal ; et pourquoi, dans d'autres momens, ces mêmes causes déterminent-elles les symptômes les plus alarmans ?

J'ai cité plusieurs exemples qui prouvent que cet accroissement des accidens se fait presque toujours remarquer à l'approche de l'époque critique. J'ai parlé d'un

homme qui, à l'âge de six ans, s'était brisé l'os frontal ; qui depuis ce temps était sujet tous les mois, pendant quelques jours, à des accès de fureur. Un autre homme se sentait aussi tous les mois, pendant quelques jours, un penchant violent à commettre un homicide ; et pour s'empêcher de se livrer à cet acte malheureux, il se sauvait toujours auprès d'un de ses amis, afin de se faire enfermer pendant toute la durée de ce penchant désordonné. On se rappelle ce soldat qui, par suite de violens chagrins, éprouva également tous les mois, pendant quelques jours, une impulsion irrésistible à tuer quelqu'un, et qui, averti par les premiers mouvemens de cette fureur, se fit enchaîner pour se soustraire à ce crime. J'ai déjà aussi parlé d'un certain Hallerau, qui croyait avoir un démon à son service. Pendant sa jeunesse, le démon ne l'avait jamais abandonné ; mais dans un âge plus avancé, le démon n'était plus à ses ordres que pendant quelques jours chaque mois.

De pareilles visions périodiques s'expliquent par le surcroît d'excitabilité, qui imprime à toutes les fonctions un caractère d'exaltation, et qui, après l'époque critique, laisse souvent un affaissement et un abattement d'autant plus sensibles, que l'excitation a été plus énergique et plus durable. C'est ainsi qu'on comprend tous les accidens des soi-disant lunatiques, les vertiges et les étourdissemens, les gonflemens et les injections périodiques des vaisseaux capillaires chez des hommes et des femmes affectés d'hémorroïdes ou irrégularité de la menstruation, les accès périodiques de certaines aliénations mentales, les attaques périodiques d'épilepsie et d'apoplexie, etc.

En traitant de l'infanticide, j'ai déjà rappelé l'attention de mes lecteurs sur ce même objet. J'ai fait sentir combien, dans certains cas, ce déplorable état de l'âme peut influer sur les actions d'une femme malheureuse, au moment d'un accouchement douloureux, qui est en même temps celui de cette excessive irritabilité.

Cette même époque devient souvent aussi funeste aux aliénés convalescens, surtout à ceux qui sont obsédés

par le penchant au suicide. A peine ont-ils passé quelques semaines ou quelques mois dans un véritable contentement, et même dans une franche gaïté, que tout leur être se trouve de nouveau bouleversé ; les idées et les sentimens se troublent ; les angoisses et le désespoir s'emparent de leur âme. C'est-là le moment où ils ont le plus besoin d'être surveillés avec une attention très sévère ; car ainsi préparés, il ne faut plus qu'un léger ébranlement pour déterminer le coup fatal. De-là, les tentatives si souvent réitérées du suicide, après des guérisons apparentes. Mais le médecin, qui connaît la marche perfide de cette maladie, ne se sépare de son malade que lorsqu'il a la certitude que celui-ci n'a plus eu la moindre atteinte de ces symptômes pendant plusieurs époques de cette singulière excitabilité.

S'il était donné à l'homme de pénétrer dans l'intérieur de ses semblables, on trouverait peut-être confirmée la triste observation que souvent les crimes les plus extravagans ont leur source dans l'influence d'une pareille circonstance. Lorsque des individus, qui ont toujours été sujets à certaines lubies, au qui depuis long-temps ont été marqués d'une légère teinte de folie, commettent des crimes sans aucun motif d'intérêt ; lorsque ces mêmes individus sont étrangement étonnés d'eux-mêmes, et qu'ils sont terrassés immédiatement après leur malheureuse action : je crois alors qu'on peut raisonnablement présumer qu'un semblable dérangement de leur âme y a beaucoup contribué.

Organ of Circumspection.—Continuation.

Natural History of Circumspection in Brutes, and its external appearance in them.

How can those philosophers, who consider the lower animals such limited beings, as to be no better than automata, explain the fact, that these same beings always make use of the most suitable, though varied means of

preserving their existence? The fox, after scenting the wild-boars, tries, before undertaking to seize one of the young, to leap into a tree with a load nearly equal to the weight of one of these creatures, so as to be sure to be able to escape the pursuit of the sow. When he happens to lose his prey in leaping, he measures distances, and practises himself in leaping over them, in order that he may be more successful another time. The bustard, the wild-goose, the linnet, the starling, and the ape, place sentinels. The pigeon, on returning, towards evening, from its excursions, describes large circles in the air, around the dove-cote, for some time before going in, for the purpose of ascertaining whether there is any thing to fear from birds of prey or martins, as well as to give the signal of return to other pigeons, which might have been forgotten in the fields. The butcher-bird, (*Lanius collurio*, Gru,) transfixes the insects it cannot eat the same day, on the spines of bushes, that it may keep them for the morrow.

Shall we content ourselves with referring to general instinct, to explain these phenomena? But what is this internal impulse, this instinct, if it be not the result of the activity of a particular organ? In man, we attribute precisely analogous acts, to foresight, to reflection. But how are we authorized to admit different causes for the same effects? I have carefully examined the heads of animals, and in all that are remarkable for their circumspection, I have found the cerebral part corresponding to the organ of circumspection in man, and the corresponding part of the skull, well developed. For this reason, the Swabian peasants, in dangerous roads, trust the guidance of their carriage to that one of their horses or oxen which has the broadest forehead.*

What is the organic cause of some species seeking

*The part which we call *forehead* in horses and oxen, is, by no means, the same region of the head that bears this name, in man. The forehead of these animals corresponds to the upper part of the head in our species.

their nourishment by day, while others go out only by night? We answer, that the latter have generally a broader head than the former. The otter and pole-cat have this region very broad. The owls, even those species that see as well by day as by night, such as the *Stryx-bubo*, *Stryx otus*, and *S. brachyotos*, all have a much broader head than diurnal birds, which also live on animal food, such as the great vulture and many species of eagles and falcons. The pigeon, which is much larger than the small kind of owl, has a narrower head. The goat-sucker, which flies only in the twilight, though smaller than the cuckoo, has a broader head. It is probable, therefore, that a large development of the organ of circumspection determines animals to seek for food by night rather than by day.

Again; what is the organic cause, why animals are inspired with the thought of placing sentinels and setting watchers? We answer, that it is by means of the organ of circumspection, that nature has revealed to them this ingenious precaution. All these animals have the part belonging to circumspection very large, and the corresponding region of the cranium very broad. The heads of the wild-geese and bustard are broader in this region than the swan's; the head of the roe-buck is broader than the common goat's and buck's; and that of the chamois, is still broader than the roe-buck's. The head of the spoon-bill, (*Platalea*), is remarkably broad in this region; and so circumspect is this bird, that hunters rarely get near enough to it to shoot it. The sparrow of our gardens and houses, which, although very bold, instantly recognizes and avoids all the snares that man can devise, also has a very broad head, and much broader than other larger birds, that are less circumspect.

Nature makes use of a contrivance that has always attracted my admiration. She seems to attach more importance to the preservation of females, than males; and, therefore, the former are endowed with a much higher degree of circumspection than the latter. I have killed

twenty squirrels, without there being a single female among them, though it was not in the season when they are retained by the attentions their young require. In the course of three years, I caught in my garden forty-four cats, among which, there were but five females. During one winter, there were killed, in two counties of Virginia, five hundred bears, among which were found only two females. Lieut. General Count Girardin, captain of the royal hunting establishment, has made a report of the wolves killed in sixty-one departments of the kingdom, from Jan. 1st, 1816, to July 1st, 1817. It appears, from this report, that there were killed, in that time, eighteen hundred and ninety-four males, and five hundred and twenty-two females.* Among the chamois, the leader is always a female; and there is no doubt that she is distinguished from all the rest, by a higher degree of circumspection.† It is only among species, where it is

* I am well aware, that this difference will be explained by saying, that more males are born than females; but, admitting this to be ascertained as completely as they maintain, though this is impossible, it does not explain the disproportion between the number of males, and that of females, that are destroyed.

As a great many children are devoured by wolves, in several provinces of France, I may be indulged in a few reflections. Have not the game-keepers a particular interest in sparing the young wolves, and particularly the females, so that they may be preserved for the great hunts? Secondly, it is thought that the most efficacious measures have been taken against the multiplication of wolves, by promising rewards. Yet His Excellency, M. Lainé, Minister of the Interior, has just published an order, relative to the destruction of wolves, and offers a reward of eighteen francs for a pregnant wolf; fifteen for one not so; twelve for a male wolf; and six for a young one. The experience of so many years might have demonstrated the inefficacy of such means. In fact, to expect these people to destroy all the wolves, would be to require them to renounce an annual income. Instead of rewarding them, it would be more for the interest of humanity, after giving each game-keeper a limited time for destroying all the wolves in his canton, to require him to make strict amends for each of those animals, found on the territory, allotted to his surveillance. It is just so, too, in countries where the hamsters make great ravages certain years.

† Females accumulate less provision than the males, and burrow deeper—a new proof of their greater circumspection. The result is, that, it being much more difficult, and less profitable to find them, the people who are charged with the destruction of these animals, destroy only the males.

absolutely necessary to oppose strength and courage to an enemy, as among wild bulls and horses, that the guidance of the troop is trusted to the most brave and vigorous male. I shall always recollect with pleasure, a female mongrel produced from a gold-finch and yellow thistle-finch, which was confined with other birds in a large aviary. She once suffered herself to be taken in a little cage I had placed near there, but I never was able to make her enter the cage again. The other birds would enter it and eat there, and suffer themselves to be caught as often as I pleased. I tried to force her in by hunger, by putting food only in this cage, but then she would watch her companions, and when one came out of the cage with a seed in its bill, she would give chase to it, until the seed was dropped; when she would catch it up with the greatest avidity; and thus she fed herself for many months. In order to catch her, I was obliged to open the aviary and make her fly into the room. Her head is much broader than that of any other among all my gold-finches and canaries, or my other mongrels.

From all that has been said concerning the organ of circumspection, it follows, that in health as well as disease, we have proofs that in man, and the lower animals, circumspection, or foresight, must be admitted to be a fundamental, primitive quality, and the organ performing this function is placed in the region of the brain and cranium that I have mentioned.

Conclusion.

All the qualities treated of, thus far, I have demonstrated to be fundamental, each of which is manifested by means of a particular organ, whose seat I have indicated and proved, by a multitude of proofs of every description. The characteristic signs, established previous to this exposition of the organs and their functions, as essential to primitive qualities and faculties, are collected together wholly, or in part, in each instance.

They are neither developed, nor do they decay, all at the same period.

Each of the qualities here treated of, may, in the same individual, be more or less active than the rest.

Each may be alone active, while the rest are paralyzed; and each may be paralyzed, while all the rest remain sound.

The most of these qualities are differently manifested, in the two sexes.

While they all exist together in man, they are dispersed and isolated in the different species of animals.

Each of these fundamental qualities, therefore, becomes a new proof of the propositions I have laid down, as indispensable principles of the physiology of the brain, viz.

All our dispositions are innate.

Their manifestation requires material conditions.

The brain is the organ of all the qualities and faculties of the mind.

The brain is composed of as many organs, as there are qualities and faculties essentially different.

In a state of health, until old age, we can ascertain, upon the surface of the skull and head, the degree of development of an organ, and the degree of activity of its function.

Such are the principles which have been proved by reasoning, and demonstrated by particular facts,—an undeniable characteristic of the truth of a doctrine.

Finally, it is also proved, that all the affective qualities, propensities, and sentiments, have their organs in the brain.

As the total of all these qualities constitutes what is called, *appetitive qualities*, we see why those, who had some idea of the plurality of the organs, could never find one general organ for the general appetitive faculty or quality; so that the charge which I have preferred against the philosophers, on this point, is found to be justified.

In the brutes, each of these qualities is a particular

instinct ; it is, therefore, impossible to explain their actions, by instinct, in general, or to find a single general organ of instinct.

According to the degree of energy with which these faculties are manifested, we shall have a result, designated by the various names of *dispositions, inclination, propensity, desire, want, passion* ; that is, each fundamental or primitive quality is susceptible of these different degrees of manifestation. Consequently, we must admit as many dispositions, inclinations, propensities, desires, wants, and passions, as there are fundamental or primitive qualities, and, at the same time, it follows, that we shall seek in vain for any other organs of the inclinations, propensities, desires, wants, and passions, than those which preside over the fundamental qualities. These considerations utterly destroy all the reveries of philosophers and physiologists, concerning the instincts, propensities, and passions. These propositions will be made to appear still more clear and conclusive towards the end of this work, where I shall expound the general features of a philosophy that naturally flows from the physiology of the brain.

The ten fundamental qualities, thus far proved and treated of, in detail, do not belong to man alone, but equally exist in the different species of animals. I have, therefore, treated of man, in respect to those qualities only, which he possesses in common with the lower animals ; but, as these qualities are dispersed among the brutes, no one of which possesses them all, man, in this point of view, is necessarily the most perfect animal. Each of these qualities is a fragment of its essence—a part of his moral character. Thus, by degrees, we are let into a knowledge of the composition of man. Those who have followed thus far, must certainly be convinced, that it is only by studying man in each of his parts, that we can arrive at a clear and complete knowledge of his whole moral and intellectual being.

We shall carry this same analysis through the intellectual faculties, and conclude our account of the organs

and their functions, with that of the sentiments and faculties which belong exclusively to man ; which place him above every other animal—which give him reason, a presentiment of his Creator, and, in one word, the character of humanity.

Determination of the Fundamental Powers of the Primitive Qualities and Faculties, and of the Seat of their Organs.

The organs of the qualities which I have been describing, have their seat in the inferior-posterior, and superior-posterior, lateral parts of the brain, or head. Since all these qualities are common to animals, it follows that man, if his brain were composed of these organs exclusively, would be, both in respect to his organization, and to his qualities, or faculties, nearly on a level with a great many species of animals. We shall now proceed to examine the qualities and faculties of the cerebral parts, situated in the inferior-anterior and superior-anterior region of the brain. These are the cerebral parts, which give to the head of man its characteristic form, and render it essentially different from that of every other creature. Many of these parts belong exclusively to him, and imprint upon him his own proper character of humanity.

These organs are situated beneath the frontal bone, which I divide into five regions ; the inferior-anterior, extending to the middle of the forehead ; the superior-anterior, extending from the middle of the forehead to the beginning of the hair ; the anterior-superior, extending from the beginning of the hair to the middle of the upper part of the frontal bone ; the posterior-superior, extending from the middle of the upper part of the frontal bone to the fronto-parietal suture ; the lateral region, extending from the fronto-parietal suture and the anterior margin of the great wings of the sphenoid bone, comprising, in fact, the anterior part of the temples.

Following the natural order, I shall first treat of the organs that are situated in the inferior-anterior region, and partly in the lateral-inferior region. The organs of the most essential qualities and faculties, being always nearest to the median line, they naturally present themselves first, and those that are the farthest from the median line, or occupy the temporal region, will come last.

XI. Memory of Things ; Memory of Facts ; Sense of Things ; Educability ; Perfectibility, (Sachgedächtniss, Erziehungs-fähigkeit.)

History of the Discovery.

After I had discovered an external mark, by means of which I could know whether persons had a talent for learning by heart, I was not long in perceiving that this sign by no means indicated every kind of memory. Among my school-fellows, were some who easily remembered words which they did not understand ; while others, who had not this talent, had a peculiarly strong memory of facts and events. Some had a remarkable talent for remembering places, for finding their way, and leading us through strange paths ; some would repeat, without a single mistake, a piece of music they had heard but once or twice before ; while others excelled in remembering numbers, dates, &c. ; but no one possessed all these talents combined in himself. Subsequently, I learned that others had made the same observation before me, and had distinguished three kinds of memory—memory of things, memory of places, and memory of words. The memory of things was called, *memoria realis*, the faculty of remembering things, or facts ; the memory of words was called *memoria verbalis*, the faculty of remembering words, and names, and learning long passages by heart, without, perhaps, understanding their meaning ; the memory of places was called, *memoria localis*, the faculty of remembering places, re-

tracing paths, and finding one's way. They had observed, too, that each of these memories could exist without the other. Still, however, nearly all philosophers have continued to consider memory as one single, indivisible faculty of the mind.

It is more than thirty years, since I taught this variety of memories, and nearly as long since I proved that memory cannot be considered as a primitive faculty of the mind; that it is only a general attribute of every fundamental faculty; that there must be as many different memories as there are essentially distinct faculties; and, consequently, that there cannot be one single and primitive organ of memory. The memory of music has its organ in the organ of music; the memory of figures, in the organ of calculation; the memory of places, in the organ of the sense of locality, or of the relations of places, and so on; or, to modify these expressions, the memory of music is an attribute of the sense of the relations of tones; the memory of figures is an attribute of the sense of calculation; and the memory of places is an attribute of the sense of the relations of space, &c.

Old, however, as this doctrine is, and disseminated as it has been by mine and Spurzheim's lectures, and the writings of my hearers, there are still philosophers, and even physicians, whose ideas on this subject are wrapped in obscurity. Yet these are the very men, ignorant as they are of the first elements of the physiology of the brain, who presume to arrogate the right of passing final judgment upon it. Villermay, in his *Essai sur les maladies de la memoir*, has adopted all the errors of physiologists. "In men of a melancholic and bilious temperament," says he, "we observe a remarkable memory. In lymphatic, sluggish, dull men, on the contrary, we find very little power of memory. The emperor Claudius, who was one of the most stupid men in the world, had a remarkably short memory. Thus, persons whose temperament is chiefly of the lymphatic nature, are most exposed to diseases of this intellectual

function." "It is very certain," he afterwards says, "that most men who indulge immoderately in the pleasures of love, have very little memory; and I have observed these habits and this result very sensibly in many persons that have a grave or deep voice, or, what is called, bass-tenor. Speaking of the immediate causes of defects of memory, he continues: "Mauget ascertained that there are two immediate causes of this defect; 1st. bad conformation and quality of the brain; 2d. the want of the occipital protuberance at birth. He pretends to have observed an excellent memory in persons whose occipital protuberance was very large." "In our days, a theory, based on similar localities of the brain, has been unable to withstand the strict scrutiny of observation and argument; and now the world is convinced, that it has no other foundations than a certain degree of probability ingeniously set forth. If there were a single point of the cerebral mass serving as the focus of memory, without doubt, this would indicate the positive seat of amnesia, (want of memory;) but we are far from determining in what part of the brain this intellectual function resides. The most probable supposition is, that it shares the lot of the other intellectual faculties, which, being indivisible, cannot be connected with separate regions of this viscus." *

This language shows, that M. Villermay has not the slightest acquaintance with organology. After concluding this account of the organs, I shall develop the main principles of my philosophy, and then correct a host of errors entertained by the scholastic philosophers, relative to memory in particular, and the moral qualities and intellectual faculties, in general. In the mean while, let us pursue our researches by the path of observation.

I am very well aware, that the designation, *memory of things*, does not include the whole sphere of activity

* Memoires de la Société de Médecine de Paris. Ire. partie de l'année 1817, p. 72.

of this organ. I have observed, that people with a large endowment of the memory of things, have, generally, a ready conception, an extreme facility in learning things; that they have the general desire of knowing, of being instructed in, and pursuing every branch of human knowledge; that they, ordinarily, have a decided vocation for teaching, and, unless prevented by the higher faculties, are easily induced to adopt the opinions of others—to embrace every new doctrine and opinion, and shape them to the fashions, manners, and circumstances around them. These considerations have led me to change the designation, *memory of things*, for that of *sense of things, sense of educability, of perfectibility*.

It would be wrong to confound this general and indefinite perceptibility, with the definite and special perfectibility of each fundamental quality and faculty. There is no moral quality, nor intellectual faculty, that cannot be exercised, and, by means of that exercise, receive an increase of perfection. Every fundamental power is susceptible of development, direction and education. This kind of perfection, however, is always confined to those objects alone, which are within the province of a special organ. On the contrary, the sense of things, of educability, or perfectibility in general, is exercised upon and extends to every thing not comprehended within the sphere of activity of primitive organs or powers. The account of the natural history of this faculty, as it exists in man and brute, will throw light upon this point. Let us begin by inquiring, whether brutes are capable of education; whether they can modify their instincts, and improve their faculties, according as they are favored by accidental circumstances and events.

If Demangeon had read what has just been said, with a little attention, he would never have been tempted to make the following remark.

“Educability, or perfectibility, which Gall has identified with the memory of things, must be measured, as observation shows, not by a swelling at the root of the nose between the frontal sinuses, but by the sum total

of all the faculties. How, in fact, can the child be educated in religion, morality, drawing, calculation, music, painting, philosophy, benevolence, social duties, without the aid of the different faculties which preside over all these objects of instruction. It is a contradiction to admit a special organ of educatibility, and at the same time, to assign to several faculties a special and exclusive part in the general work of education. If the educability of the domestic animals is in proportion to the breadth and prominence of the head between the ears, this shows, not that there is a single organ of educability, but a larger endowment of brain, coinciding with a larger intellectual capacity, without regard to the number of organs. But Gall has more than once inferred the existence of a primitive organ, from phenomena that result from a general increase of cerebral size, without showing at all that this increase of size denotes the unity of the organ."

In many parts of Demangeon's critique, a wish is manifested to attribute to a general increase of cerebral size, what belongs to a favorable development of particular cerebral parts. This disposition would render the plurality of organs superfluous. But how then will he explain, why the brain is more voluminous, sometimes in its superior, sometimes in its posterior, or its anterior, or lateral part, and why this more favorable development of these different cerebral parts, always gives rise to certain definite qualities or faculties? The examination of ten heads would be sufficient to convince him, that the most voluminous brains, the volume of which results from a very large development of its posterior and lateral parts, are by no means attended with a very great intellectual capacity, unless we confound the instinct of propagation, love of offspring, propensity to fight, carnivorous instinct, &c. with the intellectual faculties. All Demangeon's objections awaken the suspicion, that he finds it easier to reason, than to verify observations.

Natural History of the Sense of Things, of the Educability, of the Perfectibility of the lower Animals.

Every day, we see dogs and horses trained to minister to our most varied wants ; we have often seen little birds placing the letters of the alphabet, or figures, so as to form names and numbers ; and, at this moment, we have before our eyes, the case of a pig, that was trained to catch partridges. Who, too, has not witnessed the dancing bears, and the innumerable tricks of a restless ape ? It certainly will not be said, that these properties have been bestowed on animals for the purpose of self-preservation. Whence is it, then, that some philosophers always seem to disdain these facts, and speak of brutes, if not as automata, at least as beings whose intellectual powers are either entire at birth, or rapidly attain the degree of development beyond which they can go no farther. Their instinct, say they, is equally remarkable for its promptness, its correctness, shrewdness, and certainty, and its very limited and unchanging nature.

Undoubtedly, the organization of the brutes, so defective in comparison with that of man, limits, in many respects, their natural perfectibility. But, if we observe the daily life of many species of animals, we shall be obliged to acknowledge, that they enjoy memory, the power of discerning relations, of forming judgments, and even of reflecting on their acts ; that, very often, the degree of their understanding depends on circumstances ; that it rises, when put in exercise by necessity or instruction, and remains stationary, only from want of exercise. But is man more fortunate in the last particular ? When constantly occupied with providing for his immediate necessities, does he not also remain in the narrow circle of ideas connected with them ?

To prove this principle, let us follow, with C. G. Leroy, the progress of the understandings of dogs, accord-

ing to the different uses to which they are put. This progress, in some, is owing to the instruction they receive; in others, to their own experience, to the reflections which dogs themselves make on occurrences around them. The house-dog, which is almost always tied up, and whose sole duty is to bark at strangers, remains in a state of stupidity, as almost any other animal would, whose understanding had no more exercise. The shepherd's dog, which is constantly occupied with a duty that requires activity, and, excited by the voice of his master, shows much more intelligence and discernment. All the facts relative to his duty are stored in his memory, and hence results an amount of knowledge that guides and modifies his conduct. If the flock pass near a field of rye, you will see the vigilant guardian collecting them together, keeping them from plants that must not be injured, watching those which would leap over the fence, frightening the rash by startling movements, and punishing the obstinate that are not satisfied with the hint. If we do not admit that reflection, or perfectibility alone, can be the origin of this variety of conduct, governed, too, by discernment, or reference to circumstances, it is absolutely inexplicable. For, if the dog does not learn, from his master, to distinguish grain from ordinary pasturage; if he did not know that this rye must not be eaten; if he were ignorant that the vivacity of his movements must be proportioned to the disposition of the sheep, and did not recognize this disposition, his conduct would have no motive, and there would be no sufficient reason for acting.

But we must follow this animal to the chase, to see the development and perfectibility of his intellectual powers. The chase is natural to the dog, which is a carnivorous animal; so that man, in applying him to this exercise, only modifies and turns to use, a taste and disposition, which nature has given it for its own self-preservation. Hence, in the actions of the dog, we meet with a mixture of acquired docility and natural sentiment,

and that constituent principle is most conspicuous, which circumstances have most excited to activity. Nature is more free and unrestrained in the hound, than in any other variety. The habit of subjection renders him attentive, to a certain degree, to the voice and motions of those about him; but, as he is not always under their hands, it is necessary that his mind should act of itself, and that his personal experience should often rectify the judgment of the hunters. The pains that the latter are obliged to take, in order that they may give chase to the animal first roused, break in the dogs, and chastise them when they lose the scent, gradually accustoms them to distinguish the scent of the stag before them, from that of all others. But the stag, hard pushed by the chase, endeavors to associate other individuals of his species with him in the flight; and then, the dog stands in need of the nicest discernment. In such cases, nothing can be expected of the young dogs; the most consummate experience only is capable of prompt and sure decision in this embarrassment. None but the old dogs, are what is called *hardis dans le change*, that is, they readily distinguish the scent of their deer, from that of all other animals that accompany him. The hounds, whose experience is just beginning, present to the attentive hunter, a picture of uncertainty, research, and activity, well worthy of observation. They pause and show every sign of hesitation; apply their nose to the ground with the utmost care and attention, or jump up to the branches with which the contact of the animal's body has left a stronger indication of his passage, and are only decided by the hunter's voice, who encourage them by his confidence in the most sure and practised dogs. If, in a moment of excitement, they get beyond the scent, and lose it, the leaders of the pack take the only means to recover it, which man himself would employ. They turn back, examine all around their course, to find, within the circuit they have traversed, the track which has escaped them. The skill of the hunter could do no more; and

here, the experienced dog has arrived at the limit of his knowledge, in taking every means that many conduce to success.

The setter has the nearest and most constant relations with man. He always hunts under his eyes, and almost under his hand. His master allows him to enjoy it, for it is a pleasure to him, even to take the game in his teeth. He brings him this game, and is caressed if he does well, and chided, or punished, if he does ill. He manifests either pain or pleasure, and an interchange of services, gratitude, and attachment, is established between him and his master.

While yet young, the setter is, nevertheless, docile ; he listens only to his master's voice, and follows his orders with precision. But being guided by keener and surer senses than man, he is not always inclined, when age has given him experience, to manifest the same docility, though generally very obedient. If, for example, the game is wounded, and the old and experienced dog feels sure of having found the train, he will not suffer himself to be misled by his master, whose calls and threats are used in vain. He knows he serves by disobeying him, and the caresses that follow his success, soon teach him, in fact, that it is sometimes necessary to disobey.

A fox that escapes from a trap, with the loss of a foot, will avoid every kind of trap, for years together. When these crippled foxes are met with, whose infirmity announces experience, the intelligent hunter renounces all idea of taking them by ordinary means, and has recourse to others with which they are unacquainted. A young dog that has once got into a ditch covered with water-lentils, which he mistook for moss, will never, as long as he lives, be again deceived by it. In the Landes of Bordeaux, near Sales, the sheep-folds and parks are large buildings without floors or foundation. In the latter part of the eighteenth century, the wolves had never yet attacked the parks, except through the gates and holes in the walls. They never had tried to burrow

down and get under the walls. For some years, however, they have been obliged to lay foundations in masonry, for the wolves had learned to make holes under the wooden walls, large enough to carry away the animals bodily.

The fox, the hare, and the marten, that have been often chased, are far more on their guard, than others of the same species that have never been exposed to danger. The gardens in Paris are frequented by several species of birds, such as tom-tits, wrens, red-breasts, nightingales, chaffinches, green-finches, linnets, black-birds, &c., which are very rarely met with in places where they are afraid of being annoyed. The experience of perfect security is all that has inspired them with this confidence. Even many species of accipitrine birds, whose natures are the farthest possible from all restraint, acquire an astonishing docility in a very little time. We see them, high in the air, regarding the voice of the hunter, and regulating their movements by his directions, when repeated experience has taught them that docility most effectually leads them to their prey.

If the lower animals obeyed the laws of a blind necessity, if they were deprived of all perfectibility, their actions would present a perfect uniformity; they would always labor in the same manner, would always begin as they ever had begun, and finish in the same way. But bees adapt the form of their combs to that of the space in which they work; and they can be made to build the royal cells, or destroy those already built. If we make a hole in a spider's web, she repairs the rent. I have often made several holes in a hang-bird's nest, suspended to a light branch, but it never failed to repair every breach, which it always did before going on with the construction of its nest. Two swallows were in the habit, every year, of building their nest in my friend Streicher's house, in Vienna. During their absence, a bell was hung, the wire of which passed directly through the place where their nest was. On their return in the spring, they rebuilt their nest in the old place; but they

took care to leave an opening for the wire, contrived in such a way, that it would play freely without touching the eggs or young. It is impossible to observe the nests of birds with tolerable care, without perceiving that those of the young are generally, poorly built and badly situated; frequently, even, the young females set any where without having made any provision whatever. The defects in these first labors are remedied afterwards, when the animals have been better taught by the inconveniences they have experienced.

It is clear, therefore, that brutes are instructed by experience; that their actions are modified, in consequence of the different trials to which they have been subjected. We see that, relatively to their wants, to surrounding circumstances, to the dangers to be avoided, they act as the most intelligent beings would act. Many naturalists have been so struck by the voluntary actions of certain animals, that they have thought proper to deny all innate dispositions, and have wrongly concluded that every thing they do, is the result of their experience and of the instruction of their fellows. The memory of things, the educability, or perfectibility of animals, can no longer, therefore, be called in doubt.

It is equally certain, that animals are capable of a degree of perfectibility which varies with the species, the individual, and the age. The dog is more remarkable for docility, than the wolf or cat; the horse is more docile than the ox; the lion, more than the tiger; and the otter, seal, and fox receive instruction of which the badger and hare are incapable. Some monkeys yield, with admirable pliancy, to the caprices of their masters; while others repel the least attempt at education with savage indocility. Who has not admired the almost human docility of the elephant? The common gray parrot learns with the utmost facility; while others, weary the patience of their instructors.

The different species of accipitrine birds are endowed with far less docility. The vultures are stupid, compared with the falcons; and among the latter, the com-

mon falcon, (*falco communis*,) the Iceland falcon, (*falco islandicus*,) the merlin, (*f. æsalon*,) the kestrel, (*f. tinnunculus*, *gyrfalco*, *f. lunarius*,) the common goshawk, (*f. palumbarius*,) the sparrowhawk, (*f. nisus*,) readily suffer themselves to be trained to hunt. The *falco lithofalco*, and the *f. sacer*, on the contrary, like many other species, are completely indocile. The Tartars of Siberia know so well how to train the common eagle, (*falco fulvus*,) that it catches hares, foxes, wolves, and antelopes.

Individuals of the same species, and even variety of animals, present striking differences in respect to training. The intelligent water-spaniel, the vigilant shepherd's dog, the docile hound, are far more readily taught than the fine English mastiff and the graceful harrier. One water-spaniel excels another, in docility; one hound is preferable to another hound; one horse, to another horse. One gnat-snapper makes more rapid progress in instruction, than others of the same species; and so of the starling, thistle-finch, &c.

Finally, a well-marked difference, in regard to educability, results from difference of age. What the animal that has been instructed from its birth, easily learns, is difficult to the adult, and impossible to the old animal.

The above is a very brief view of the perfectibility of animals; and now my readers have a right to ask, whether the cerebral organization of brutes will generally explain their educability; and whether it differs with the different degrees of the educability of species, individuals and ages? When these questions shall be answered in the affirmative, it will be an extremely probable conclusion, that the perfectibility of animals must be considered as the function of a primitive organ of the brain.

Examination of the cerebral Organization of Animals, compared with their Perfectibility; Seat and external Appearance of the Organ of the Memory of Things, or of Educability—Perfectibility.

When we pause before a series of skulls of men and brutes, or compare those drawn from nature in my plates, our attention will be arrested by an essential difference between them. The human skull is broad in its inferior-anterior part, directly over the orbits; while those of brutes, on the contrary, are far more contracted and narrow, in that region, and generally rise so little, that they retreat immediately above the orbits, which are never overshadowed by the brain. Their brain, therefore, in its inferior-anterior region, is much less complex and perfect than man's, and their organs in this place are much fewer and smaller; and the consequence is, that the faculties connected with them are equally few and feeble. This fact has been observed by a great many naturalists. Camper has made it the foundation of his theory of the facial line, which I have elsewhere shown to be insufficient for determining the degree of intelligence. Lavater was so convinced of the significance of this difference in the form of the lower part of the forehead, that he formed a scale of the gradation of the forehead, from the frog to the Apollo Belvidere. Lavater thought only of his ideal scale, instead of presenting the series of steps which really exists in the gradual increase of perfection. There is a want of precision, too, in this theory; for the inferior-anterior region of the brain being composed of several organs, beginning on the median line, and extending to the temples, must not be considered without some qualification, in order to measure the degree of perfectibility. Those convolutions alone that are placed towards the median line, and separated only by the interposition of the inferior-

anterior part of the falciform process, are devoted to this function ; so that it is only the corresponding part of the cranium that requires our attention, in the following observations.

Animals least capable of instruction, have the smallest cerebral parts above mentioned ; hence the complete flattening of their head. Fishes, frogs, snakes, crocodiles come into this class. To make the observation easier, I will not dwell on a great many intermediate animals. Let us compare successively those of a pretty high order, viz. the heads of the badger, otter, beaver, seal, wolf, grey-hound, hound, and water-spaniel. In pl. lxvi. we see that the head of the badger, fig. 1, is most depressed, directly behind the frontal sinuses, where the brain begins. The highest line does not even indicate the position of the brain ; it only marks the bony crest found on old badgers' heads, as in many other carnivorous animals. The second line indicates the direction of the brain. It goes on, descending from the frontal sinuses, and forms a segment of a circle with the bones of the face. In the otter, fig. 2, it is perceptibly more elevated. In the fox, fig. 3, it is still more so. In the head of a large greyhound, fig. 4, the elevation of the anterior part of the brain begins to form a forehead, of which there exists no trace in the badger, otter, or fox. The forehead is much finer and higher in the water-spaniel, fig. 5, which is remarkably teachable.

The same results are obtained by comparing the heads of the otter and beaver, with that of the seal, which is extremely docile ; the heads of the wolf, hyena, jackal, and glutton, with those of all the varieties of the dog, particularly the water-spaniel, pointer, and our little house-dogs. The head of the stupid greyhound approaches very nearly the wolf's. I have the head of a wolf that was raised with the rest of the litter, but is remarkable for his mildness and docility. The region directly behind the frontal sinuses is much higher than in ordinary wolves.

I must refer my readers once more to pl. xxxiii., where they will see that the anterior convolutions are more developed and elevated in the brain of the lion, fig. 4, than in the tiger's, in which, on the contrary, the convolutions of the murdering instinct are larger and more prominent than in the lion's. Submitting the different species of apes to the same comparison, we see that the heads of the fierce papions and mandrins, which are so indocile, are conformed, as it respects the organ of educability, very nearly like those of the tiger and panther. Fig. 1. pl. lxxviii. is the head of the redoubtable pongo, and fig. 2, the head of the fierce and lascivious papion of Buffon, (*Simia sphinx*, Lin.) Of a very different character, in respect to educability, are the apes represented in pl. lxxix. The sajou, fig. 1, (*Simia fatuellus*,) is very different from the say, fig. 2. (*Simia caprecina*,) and the latter, though possessing some very amiable qualities, cannot be compared with the chimpansé, fig. 3, (*S. troglodytes*.) They live in troops, build houses with the branches of trees, arm themselves with stones and sticks, and drive men and elephants from their abodes; they pursue negresses, and carry them away into the woods. In the domestic state, they are so docile, that they are taught to walk, sit, and eat like men.* Finally, the ape that most resembles man, in the shape of his head and brain, is the orang-outang, fig. 4, (*s. satyrus*;) he easily becomes tamed and attached, and imitates a great many of our actions. The brain of the orang-outang is represented in pl. xxxiv. fig. 2, and 3; fig. 1 represents the brain of the rhesus, (*patas*,) which is much inferior.

The same truth is confirmed, whatever order or family we choose to submit to a similar comparison, always having regard to the different degrees of educability of the different animals subjected to the examination.

* Cuvier, *Regne animal*. T. 1. p. 104.

It remains to be examined, why young animals learn with more facility than adults and very old ones. They talk of the traces which impressions more easily leave on soft brains, than on those that are already in a consolidated state ; but as we are totally ignorant how instruction is effected, this theory must be ranked among hypotheses. This, however, is certain, that in young animals, the inferior-anterior middle convolutions of the brain, are, proportionally, much more developed than they are at an advanced age. It is at the moment of birth, or soon after, that a knowledge of the external world is required, so far as it is necessary for its self-preservation. The author of nature has thus manifested his wisdom, in making the wants simultaneous with the development or activity of the cerebral parts destined to provide for them. The colt, the young ass, the calf, the kid, the young lion, the young wolf, the kitten, the young apes, and even young birds have the anterior-inferior region of the head more prominent than adult individuals of the same species. Thus, is there a perfect harmony between the organization and the function.

*On the Domestication of the Lower Animals, and their
Disposition to be tamed.*

Why have certain animals been reduced to the domestic state ? how have the wild bull and horse been tamed ? Man, by the superiority of his intelligence, it is said, has tamed and enslaved the creatures that seemed most useful to him. Thus it is that man, proud of his prerogative, and arrogating extensive influence over every thing around him, forgets that it is to a higher order of being that he is indebted for the blessings of nature. If the power of human intelligence has tamed the bull, the stallion, and the boar, why are we, whose knowledge of animals is far more accurate than our ancestors, incapable of domesticating the wild fox, cha-

mois, pigeon and duck? It has been tried a thousand times to rear young wild pigeons with tame ones. The former have been taken from among the gregarious species, and been made to hatch and raise broods, generation after generation, in the hope that they would finally be converted into tame pigeons. As long as they were shut up, they were quite familiar with their companions, but the moment the dove-cote is opened, they soon fly off, never to return. The art of taming wild partridges, ducks and pheasants, has long been known. They buy the eggs, and have them hatched by hens and common ducks; the brooder is shut up, and the young are thus accustomed to their mothers, but hardly have their wings made their appearance, when they fly away. To keep them in the yard, they must be tamed about the house, gradually accustomed to other poultry, and, at times, shut up together with them. But this is not sufficient; the two stoutest feathers must be plucked very early from each wing, and the ends of the others cut off. While the young partridges and ducks are sensible of their feeble powers of flying, they fly short distances by day only, and return in the evening. But although they have been so tamed, as to return at the sound of the drum or whistle of him that attends them, yet if they neglect to cut their wings after moulting, they get at large, and prefer living at their own expense. It is just so with wild-boars, wolves, roe-bucks, which, however tame they may be, try to get at liberty, the moment their natural propensities are developed.

The most ferocious species may be subdued by hunger and caresses, and we may succeed in familiarizing them to us by habit; but no sooner does the animal find himself free from the barriers to which he has been accustomed, than nature resumes her rights and triumphs. The Tipoo-saib tiger, after being trained to the chase, will readily relinquish himself to the impulse of his natural instinct. So that, although it may be possible to make some individuals *domestic*, they are not

thereby necessarily *domesticated*. All these facts prove that it is not in consequence of his superior intelligence, man claims the empire over certain animals; and it must be acknowledged, that if the bull, the horse, the pig, the sheep, &c. are associated with the wants and labors of man, we must seek for its cause somewhere else, than in his will and designs.

It is very certain, that animals which live in the enjoyment of full and perfect liberty, present great differences in the facility with which they are tamed and domesticated. In Egypt, dogs are considered unclean, and no one takes the slightest care of them; still, they roam about in troops, through the cities and even villages. Other species, too, without being entitled to be called domestic, always seek the neighborhood of man; they establish themselves in his gardens, and even in his houses, while others fly far away from his abodes. Several species of swallows, the sparrow, jackdaw, merlin, white stork, &c., establish themselves in our towers, steeples, houses and gardens; while other swallows, the wood-sparrow, crow, common falcons, and black stork, prefer to be at a distance from man, and build their nests in the woods—an additional proof, that here, as every where, whatever man may do with the faculties of animals, nature always begins the work. The means by which she exerts this varied influence over animals, is the diversity in the development of the cerebral parts, in virtue of which they are more or less easy to be educated and improved.

If we compare the head of the wild-boar with that of the hog, the chamois' with the goat's, the head of the black stork with that of the white stork; if we compare the hyena, jackal, and wolf with the dog, the wild rabbit with the tame, the wild cat with the domestic, wild pigeons with domestic ones, the garden-sparrow with the wood-sparrow, the yellow thistle-finch with the gold-finch, the wild goose and duck with tame ones,—we shall always find the region of the brain and cranium above mentioned, more protuberant and

elevated in the domestic animal, and more flattened and depressed in the wild. See pl. lvii. fig. 6, wild duck ; fig. 7, tame duck ; fig. 8, wild pigeon ; ring-dove ; fig. 9, domestic pigeon. The angora cat, which is naturally tamer and gentler than the common cat, has this region perceptibly more prominent.

At Gottingen, Blumenbach showed us a gull belonging to a large species, which, we concluded, from its finely elevated forehead, must be easily tamed. He told us that the very first day, when one of its wings was broken by a musket-shot, it ran through the house like a perfectly domestic animal. Afterwards, we learned, that in some northern regions, the gull is, in fact, domesticated. Thus, the favorable development of the inferior-anterior middle portion of the brain, provided it is found in the whole species, always warrants us to infer, either that nature has designed it to be domesticated, or at least that some individuals are easily tamed and instructed. See the brain of the elephant, pl. xxxv. We may also confidently predict, that all the pains in the world, to domesticate animals, in which these cerebral parts are small, will be fruitless.

If this part is found remarkably developed in an individual belonging to a species naturally wild, it will always be distinguished from the rest, by its gentle and docile character. I have already cited the head of a wolf, remarkable for its mildness and docility. I have also spoken elsewhere of the ferocious animals in the Royal Garden, whose good or bad dispositions, in this respect, we have constantly divined. There is, at this moment, in the garden, a hunting tiger, which has been trained to hunt, like a dog. His forehead is more arched than the other tigers', and his temple less broad. One of my auditors brought in the heads of two woodcocks, one of which soon became extremely tame, after being wounded in the wing. The lady-owner of the estate, where these animals had lived, having previously often taken care of other woodcocks, wounded in this way, was struck with this peculiarity. All my auditors

instantly recognized the head of the individual that had been tamed by the benevolent lady. In this way I have long been in the habit of choosing from among a great number of thistle-finches, starlings, and bull-finches, those which are remarkable for their docility, and the ease with which they are tamed.

In domestic species, those individuals that have the finest forehead, excel the rest in intelligence. It is impossible to be deceived in the choice of oxen, horses and dogs, when we are ever so little familiar with the seat and external appearance of this organ, in the different varieties of these animals. Pl. lxiv. fig. 1, represents the head of a vicious, indocile horse. The forehead begins to retreat, about an inch and a half above the eyes. Fig. 2, is the head of a gentle, docile horse, in which, at the same distance from the eyes, the forehead either continues in a perpendicular direction, or swells out a little. The same difference exists in the two dogs drawn in pl. lxx. Fig. 3 represents the head of a dog, vicious and less docile than that represented by fig. 4, which combines great docility with gentleness of disposition.*

The result of all these observations made on the most different classes of animals, is, that the educability or perfectibility of brutes must be considered a peculiar fundamental faculty, and that its organ is situated in the inferior-anterior middle portion of the brain and head.

Memory of Things, Educability, Perfectibility of the Human Species.

The doctrine of the cerebral functions has been charged with being in opposition to the perfectibility of man, and to the effects of education. If by education is

* When I come to treat of the organ of benevolence, I shall show how to distinguish the organ of docility from that of benevolence.

to be understood, the creation of primitive qualities or faculties, the germ of which does not exist in the organization, then, I deny the possibility of all education whatever. But if by education it is meant, that the innate qualities and faculties can be cultivated, neglected, repressed, or directed, I am among the strongest believers in education, and in many passages of this work I have shown how deeply I am impressed with its importance. All that I have been saying relative to the perfectibility of animals, will be a fresh proof to the reader, that I must, of necessity, entertain the highest ideas of the perfectibility of man, and, consequently, of the great influence of good or bad education. In the wildest state, idiocy excepted, man is still very far above the brutes, and in all his degradations, he never gets down to their level. Whatever may be his situation, he is still man—the most happily organized of all created beings. Whether he is in France, or the Cape of Good Hope, or the Straits of Magellan,—whether he be European or Hottentot, he every where operates upon objects around him, with his natural faculties and qualities. Man was designed to live under the most varied influences. The savage state, barbarism, civilization under a thousand different forms, are in turn his heritage,—without stability, and often without the slightest consistency in the governments, laws, and religions, whose object is to regulate his thoughts and actions. Sometimes master, and sometimes slave, he uses his faculties for his enjoyment, or he is condemned to every species of privation. He must then have received from nature a talent, or disposition, to accommodate himself to all kinds of circumstances, to a *single* concourse of which, without this flexibility of constitution, his happiness must have been entrusted. Every change or variation would have placed him in a state of opposition and misery. It was necessary that he should carry within himself the principle of perfectibility; curiosity, the desire of knowledge, the wish to be taught, must necessarily have inspired him with contempt of ignorance, dislike of defects, and aspirations for

perfection. The savage and the civilized man, nations and individuals, always and every where, tend to the same object. Yet, astonishing as it is, man has been seen for thousands of years, living in families, forming hordes, tribes, and nations—alternately under the yoke of despotism, and on the throne of independence—constantly prospering under the ægis of the arts and sciences, and declining under the influence of ignorance and sloth ; for ages past, researches have been made on the education of the human species, or the civilization of nations,—and how few philosophical writers have had any precise and correct ideas relative to these marvellous operations !

Man has always reasoned upon principles contrary to his natural constitution. They have supposed that man, if abandoned to himself, would be utterly incapable of all self-instruction. Astonished at his own knowledge, and ignorant to the last of his own resources, man, in order to explain the origin of his powers, must have necessarily been obliged to recur to foreign direction and inspiration. The most essential things to his happiness, rules of moral conduct, he could not, consistently with this theory, derive from his own constitution. Hence the supernatural origins of which nations boast ; hence the revelations directly from the gods, or through prophets and men, singularly favored by the Divinity. Hence also the fatal error, that there is no conformity nor harmony between moral and religious institutions and human nature ; and that the former, on the contrary, are foes to the most natural desires, passions, and enjoyments of man.

The theory that derives all our ideas and all our knowledge from sensation, and considers the five senses to be the principal sources of all our faculties, has singularly favored the erroneous opinions relative to the primitive condition of the human species and the successive progress of his civilization. Even on this theory, there would still be some ground for believing, that when born with all his organs fully developed, man's

intelligence would, at first, be no less limited ; that all his motions, and sensations, and thoughts, would be slow and painful ; that he possessed only the simple capacity of improvement, and needed the impressions of external objects upon his senses, in order that this capacity should be exercised, that his faculties and propensities should be formed and developed. There would be some reason to believe, that the moral and intellectual man is entirely the work of art ; that our primitive state has no manner of resemblance to that which we subsequently attain ; that we as little resemble the man of nature—our original,—as an oak resembles an acorn ; and that civilized man must be reckoned among the usurpations, which the factitious qualities and faculties have made over the empire of nature.

I have often shown that all this kind of reasoning is applicable to man, so far only as his knowledge is accidental, relative to outward objects. The whole physiology of the brain proves that the partisans of this theory overlook the inward man, the most fruitful source of human improvement ; the only source of the affections, passions, instincts, sentiments, propensities, and talents ; the only source, in general, of every fundamental quality and faculty with their common attributes. None of these powers, I repeat it, can be the result of sensations from without. Let them explain to me, why brutes that are surrounded by the same external objects, and receive the same impressions, never acquire the propensities and talents peculiar to man ; let them explain to me why each species of animals, though moving in the midst of the same influences, continues to be confined within the specific sphere of its propensities and faculties. And after all, since every philosopher admits that brutes possess innate instincts, propensities and faculties, where do they find their authority for deriving the propensities and faculties of man from the constantly changing play of accident ? The uniformity of the moral and intellectual character of all nations, and even of all individuals, though experiencing the most different impres-

sions, is in favor of my assertion, that man also has been originally provided with specific propensities and talents ; and consequently, that there can be no factitious quality or faculty, no good or vicious disposition, that can be attributed to barbarism or civilization. Cicero's passion was literary glory, and not more factitious than the ambition of the savage to destroy his enemy.

Another erroneous notion on this subject, is that the only means of obtaining the exact estimate of the effects of civilization, or factitious qualities, would be to observe men, that had never had the slightest communication with their fellow-men. To this objection, I have already replied, when treating of innate dispositions, and I ask these philosophers, if they would consider themselves as having fully studied, and become acquainted with all the qualities and faculties of the elephant, orang-outang, beaver, bee, or ant, after observing a single individual of these animals ? Now, it is an essential part of man's destiny, to live in society ; all his propensities and talents are calculated for the social life ; consequently, his history, like that of every other active being, must be drawn from his conduct in the situation for which he was formed, and not from his appearance in a forced and extraordinary state. A savage caught in the woods, even when not an idiot, is an exception, and cannot be taken for a general example. All experiments and deductions relative to the educability of man, require to be made on entire societies, and not on individuals separately considered. When, under such circumstances, man is found passing from the savage state to that of barbarism, and from barbarism to civilization, we must be convinced that he has not been moving farther and farther from his original nature.

The conclusion of the whole matter is, that the origin of every special quality and faculty belongs to nature, and not to accidental instruction, to the social relations, or to factitious wants. If we consider how much more numerous and intense these same qualities and faculties are in man ; how much more developed are

the anterior-inferior middle convolutions in man, than in brutes, we shall easily conceive that the perfectibility of the human species must infinitely surpass that of brutes. The perfectibility of the latter is limited to their wants, which, in consequence of their imperfect organization, are much less numerous and urgent. Except the instinct of propagation, that of love of offspring, and that of self-preservation, or self-defence, almost all their interests are of a temporary nature. The degree of perfectibility that almost any species can attain, is confined to the individual and to a single life. There are but few cases where perfectibility is transmitted from one generation to another, and manifested spontaneously, like other bodily dispositions. The breeds of dogs that have been constantly trained to seize and bring the game, are finally born with these two dispositions, which are also obliterated and lost, if we cease to maintain them for many generations. This proves, no doubt, that some species are capable of a certain degree of perfectibility, which, however, is not at all to be compared to that of ours. Besides the superiority of his organization, man also possesses many external means for increasing the perfectibility, whether of individuals, or of the species. Tradition, language, writing, printing, monuments, social intercourse, leisure, &c., are so many instruments which he uses to extend the sphere of his ideas. On the foundation which the preceding age has left him, he builds for the coming age, and thus arrives at a degree of perfection in the use of his qualities and faculties, which can only result from the long experience and numerous efforts of many generations. Hence the wonderful and unfaltering progress of the arts and sciences. One new fact is added to another, and recorded by the manifold means of transmission.

It is impossible here to enter into the details of the educability of the human species—it would require the whole history of human civilization. I can merely remark, that the degree of perfectibility is always in proportion to the degree of the perfection of the organization.

This is the reason why certain nations remain for thousands of years at the same place on the scale, without our being able to attribute it to the severity of the climate, the influence of despotism, or a gloomy and superstitious religion ; while other nations, as soon as they are formed, are advancing by long strides, towards the perfection of which our species is capable. The same difference occurs among different individuals of the same nation and family. There are young people who are interested in nothing, whose attention is fixed on nothing. Nothing can change their habits, and they remain just where circumstances have placed them. Others, on the contrary, seize on external things, with the keenest avidity,—every thing is observed : every event is a motive for instruction ; and every specimen of excellence is a model for them to follow.

He who would behold with feelings of admiration, human educability in its fullest extent, has only to follow the progressive development of the understanding in well-organized children, from birth to the age of ten or twelve years. What a prodigious amount of knowledge has the child acquired, at two years of age, when the special, fundamental qualities and faculties are hardly sketched, much less fully developed and perfected.

From all these observations, I conclude that educability, perfectibility, the sense of things or facts, is founded on a primitive organ, both in man and brute, and must be ranked among the number of fundamental faculties. The following remarks will furnish conclusive proof of this assertion.

Seat and external appearance of the Organ of Educability, Perfectibility, of the Sense of Things in Man.

I have already said that, in man, the brain not only rises above the roof of the orbits, but even juts over

them, which renders our forehead higher than that of the brutes, and, in many persons, brings it out in advance of the level of the eyes.

In the human brain, the convolutions, xxi. pl. iv. pl. v. pl. ix. pl. xii. pl. xiii., constitute the organ of educability. The height and prominence of the corresponding part of the forehead, and the individual's capacity for improvement, or perfection of his sense of things, is in proportion to the development of these convolutions. If we will compare the heads engraved in pl. xviii. xix. xx. xxvi. xxviii. xxix. l. liv. fig. 2, which belonged to imbeciles, or to people whose intelligence or perfectibility was very limited, with the heads in pl. xxx. xlvi. lvi., which mark the great perfectibility and intelligence of the persons to which they belonged, we shall form a correct idea of the difference of this organization.

I have often shown, in my lectures, the head of a physician, whose immense variety of knowledge always enabled him to be brilliant in company. He knew something on every subject, but was always adopting every new doctrine. In the immortal Stoll's time, he was a zealous Stollian; when Peter Frank appeared, he unreservedly professed the principles of this great man; and when the murderous doctrines of Brown were turning every head, he prescribed nothing but opium, wine, snake-root, and musk. Every new medicament immediately became a panacea, and he never failed to insert in the medical journals, accounts of the astonishing effects of his favorite remedies. His readiness in embracing new views, was such, that he never seemed to think of the necessity of subjecting them to the ordeal of experience. The inferior-anterior middle part of the forehead was very large, while the upper frontal part retreated. I have always observed, that persons thus organized, are rather like bees, gleaming from the productions of others, than the source of new inventions themselves. At Berne, we saw the founders of a new religious sect. Observing that one of them had the cerebral part in question, extraordinarily developed, I de-

clared that this man would labor in the department of education, if circumstances permitted. What was our surprise to learn, that this same individual was charged with the duty of disseminating the new doctrine, by teaching. Every day I meet with proofs of the influence of a large development of this organ; and it is almost superfluous to remark, that the direction this faculty receives, is noble or otherwise, according as the other cerebral parts situated against the forehead, are more or less favorably developed.

Pl. lxxx. represents the bust of the Abbé Gaultier, author of a great many elementary works on education. The whole forehead, but particularly the lower-middle part, is very prominent. The organs of benevolence, and love of offspring, are also very well developed, and we know with what zeal and disinterestedness, this estimable man devoted his whole life to the education of children.

Climate seems to have a marked influence on the development of this organ. It is, in fact, very sensibly larger in people that have early arrived at a high degree of civilization, than in those whose progress, though obstructed by no serious impediments, has been slow. But, since there is nothing perfect, those very nations so fond of learning, and so celebrated for intellectual brilliancy, also pass, with wonderful facility, from one fashion and opinion, whether political, religious, or philosophical, to another; while other nations, whose organization is less favorable in respect to educability, are less inclined to abandon the manners, customs, and opinions of their ancestors. A too great and exclusive activity of this organ, subjects both individuals and people to a continual fluctuation of manners and opinions; too little activity, on the other hand, condemns them to the slavery of an immutable, hereditary routine, it matters not whether good or bad. Such is the lot of the Caribs, Hottentots, &c., pl. lxxiv., in which, fig. 1 represents the skull of a young man from St. George's Bay, and fig. 2, the skull of an adult Carib from the Island of St. Vincent's.

In order to explain the great educability of young animals, I have shown that in them the organ is more developed than in adults. It is just so with the human species, as I have already indicated in many parts of this work. At three months old, the infant's forehead begins to be prominent, instead of maintaining its perpendicular outline. Frequently, (and this occurs in children uncommonly well organized,) the frontal part near the median line, advances far before all the rest, so that there is formed an elongated prominence, extending from the root of the nose to the middle of the forehead. In subjects whose organization promises great inductive talent, this prominence unites with the organ immediately above, where the latter is considerably developed. In this case there exists a long protuberance on the median line, extending from the root of the nose to the top of the forehead. Pl. xli. fig. 1, is the forehead of the newborn infant; fig. 2, the rounded, swelling forehead of the infant, when several months old. It is the great development of the inferior-anterior middle convolutions, that gives to children that extraordinary educability; that faculty of receiving and appropriating, in a very little time, a prodigious amount of impressions from the external world.

Thus, numberless observations made upon man, and every species of brutes, leave not the slightest doubt, that the sense of things, educability, perfectibility, is a fundamental faculty, whose organ is placed in the inferior-anterior middle part of the brain and head.

XII. Sense of Locality, Sense of the Relations of Space. (Ortsinn, Raumsinn.)

History of the Discovery.

My taste for natural history often led me into the woods, for the purpose of ensnaring birds, or finding their nests. In the latter pursuit I was quite fortunate,

because I had often observed on which side of the tree, whether northern, southern, eastern, &c., each species were accustomed to build their nests. I should have succeeded equally well, in setting my snares, because I was in the habit of ascertaining the district the birds frequented, by their song and movements; but when I went to see what birds had been taken, or to carry away the nest, five or eight days afterwards, it was often impossible for me to find the tree I had marked, or the snares I had set. And yet, after placing my snares, I would always, before quitting the spot, approach it by different paths; I would stick branches into the ground, and cut marks on the trees; but it was all in vain. This obliged me always to take with me one of my school-fellows, who, without the least effort of attention, would go straight to the place where a snare was set, though they might have placed ten or fifteen in a quarter, that was not familiarly known to them. As this youth's talents were not above mediocrity, the facility with which he could always find his way, was so much the more striking, and I often asked him how he contrived to guide himself so accurately; to which he replied by asking in turn, how I always contrived to lose myself every where. In the hope of obtaining some light on this subject, I took a cast of his head, and endeavored to discover persons that were distinguished for the same faculty. The celebrated landscape painter, Schoenberger, told me, that in his travels, he was in the habit of making only a very general sketch of the countries that interested him, and that afterwards, when he wished to make a more complete picture, every tree, every group of bushes, and every stone of any size, presented itself spontaneously to his mind. I took a cast of his head, and placed it by the side of my school-fellow, Scheidler's. At this period I became acquainted with M. Meyer, author of the romance, *Diana-Sore*, whose only pleasure was in wandering about. Sometimes he went from house to house in the country, and at other times attached himself to some man of fortune,

to accompany him in extended travels. He had an astonishing facility in recollecting the different places he had seen. I moulded his head also, and placed the cast by the side of the rest. I then carefully compared them together, and, though very different in many respects, yet I was struck by the singular form, common to them all, of the region directly over the eyes, near the organ of educability. They all had two large prominences which began just outside the root of the nose, and ascended obliquely, upwards and outwards, as far as the middle of the forehead.

From that time, I began to think that the faculty of recollecting places, might also be a fundamental faculty whose organ was in the region of the brain just mentioned. Upon this hypothesis, all that was said of local memory is perfectly well explained, and we are abundantly furnished with matter for new reflection.

Before proceeding farther, I must remove one difficulty, which will be presented to the mind of the reader unacquainted with anatomy. In some human heads, particularly of males, the external plate is separated from the internal, directly above and on the sides of the root of the nose; and as, in these subjects which may not be very old, the external layer is carried outwards, and not inwards, as in the decrepitude of old age, there are produced two very perceptible prominences in this region. Now, it is these prominences, which the opponents of organology maintain that I take for the external appearance of the organ of the sense of locality. This objection was anticipated and answered, long before they made it. My opponents, and anatomists generally, err in considering the frontal sinuses to exist in all individuals. They are rarely found in women, and are often absent in men, till quite late in life, when the internal plate retires inward, without, however, forming any external prominence. True, these prominences, formed by the frontal sinuses, are situated just where the external mark of the organ of the sense of locality begins; but they have an almost horizontal direction,

most often directly between the eyebrows, and sometimes extend to half the length of the eyebrows. On the contrary, the prominences produced by the organ of the sense of locality, swell out more uniformly, present no inequalities, and extend obliquely upwards and outwards, to the middle of the forehead.

In order to avoid confounding the development of this organ with the projections of the frontal sinus, in the lower animals, a thorough acquaintance is required, with the structure of the head in the different species. In some, such as the bull, buffalo, elephant, bear, and pig, all the adults have large frontal sinuses. In others, as in the human species, they exist in one individual, and not in another. Many varieties of dogs, and often individuals of one of these varieties, appear to have large frontal sinuses, though anatomy shows, that they have none at all, and that their brain is placed directly against the very thin cranial bones.

Natural History of the Sense of Locality in the Lower Animals.

The first idea once developed, we suddenly find ourselves possessed of riches, whose existence we never suspected before. Long before making the observations just related, I had two dogs, one of which, though quite small, often left the house, on some excursion or other, but never failed to return. The other—the same before mentioned, as delighting in killing—always got lost whenever he quitted my sight in the street, and I never could find him, but by having him cried and advertised. Subsequently, I had a little bitch, that never could learn what story of the house I lodged in. When in accompanying me she got lost, she would stand still, and not move a step, and in order to find her, I had only to retrace my steps. I one day observed a little bitch busily engaged in eating on a dirt-heap. It seemed as if the manner, in which I looked at her, inspired

her with confidence, for she followed me without once inclining to return. I gave her to a lady, who, the next day, lost her beyond the barriers of Paris. That, and the following day, it rained in torrents without cessation ; on the third, the dog returned to the lady's house, which was in a little out-of-the-way street in the middle of Paris. Although she subsequently became quite attached to her mistress, she still would take a daily ramble into every quarter of the city, even when she had young, but never failed to return at meal-time. One day she was missed about ten leagues from Paris ; nevertheless, she reached home before her mistress. A dog was carried in a coach from Vienna to St. Petersburg, and at the end of six months, he reappeared in Vienna. Another was transported from Vienna to London ; he attached himself to a traveller, and embarked with him, but, as soon as they landed, he made his escape, and returned to Vienna. Another dog was sent from Lyons to Marseilles, where he was embarked for Naples, whence he returned by land to Lyons. A game-keeper in my native country, sold a hound to another hunter, who lived more than three hundred leagues off, in the very heart of Hungary. Some time after, they were informed by letter, that the dog had escaped, and, after some months, he arrived at his old master's, wasted with fatigue. Is there one of my readers unacquainted with similar facts? How is this phenomenon to be explained?

They generally have recourse to the exquisite smell of the dog. But, sometimes, dogs return from a very great distance, which have a very dull sense of smell, and how could a dog, by means of his nose, discover the traces of a journey which he made in a carriage, or by water, and that too, after having been shut up for several months? Would not the rains, snows and winds necessarily destroy all emanations? Who will venture to affirm, that a dog can discern the effluvia of his master, several hundreds of leagues distant. Besides, it is a well-attested fact, that, in these cases, a dog does not

return home by the straightest road, but takes circuitous paths, and frequently one very different from that by which he was carried away. Some naturalists, considering these circumstances inexplicable by the sense of smell, prefer to admit an unknown sense, which they call the *sixth sense*.

It is impossible, in fact, to explain the phenomena by means of the sense of smell. Nobody considers pigeons to have a very exquisite smell; yet it is universally known, that if we carry them in a bag across the fields, to a considerable distance, into a country with which they are entirely unacquainted, and let them loose, they will return directly to their dove-cote, and by the shortest route. M. M. Van Heynsbergen and Van Breda communicated to me the following fact: "Two pigeons, a male and female, of the variety called in French *pirouetteurs*, which have a very rapid flight, were sent from Vlaardinge (a little town in Holland, on the Meuse,) to Iceland. The ship had nearly reached her destined port, when the male escaped, and immediately rose so high in the air, that the eye could scarcely follow him. The captain of the vessel, fearing he would not return, let the female loose, in the hope that she might attract and bring him back; but she, after fluttering a few moments among the rigging, rose in the same manner, and joined the male. After amusing themselves some time with flitting about in the air, they directed their flight by the shortest course, towards Holland, with so much accuracy, as the captain himself, to use his own expression, could have gone by following the compass. It appeared from the date in the log-book, that the birds arrived the third day after, at Vlaardinge, at the house from which they were carried away. They were so fatigued and exhausted, that they fell from the roof into the yard, after having been called in vain, a long time by their master, who threw them some food, and during the first week, they never went out at all.

The papers lately gave an account of a bet, relative

to some pigeons that were carried to a great distance, from Bordeaux or Toulouse, to be liberated at an appointed place.

Baron Haak, carried from his country-seat near Mannheim, a male and female pigeon, a distance of eighty leagues, into the Voralberg. There they were set at liberty, and both returned home.

Facts of this kind, gave rise to the practice now in use, of employing pigeons to carry letters.

Cats have been carried ten or twelve leagues in a bag, and still have returned. At Vienna, I saw an Iceland falcon, which had not forgotten its country after a captivity of several years. When he was unhooded for the chase, he rose perpendicularly from his perch, till he was out of sight. They followed him with spy-glasses, and observed him, after describing some circles in the air, directing his flight straight for the north. Joseph II. called the attention of the spectators, of whom I was one, to the direction of his flight. It was the emperor's amusement to let off after this falcon, two lannerets, which would rise above him, and bring him down. When in a country, abounding with honey, we carry off bees to a distance of several leagues, they rise to a considerable height, describe a circle in the air, and though they may belong to a hundred different hives, each one finds his own.

In O'Meara's *Napoleon in Exile*, (vol. I. p. 155,) we find Napoleon uttering the following words: "There is a link between animals and the Deity. Man is merely a more perfect animal than the rest. He reasons better. But how do we know, that animals have not a language of their own? My opinion is, that it is presumption in us to say no, because we do not understand them. A horse has memory, knowledge, and love. He knows his master from the servants, though the latter are more constantly with him. I had a horse myself, who knew me from any other person, and, by capering and proudly marching with his head erect, when I was on his back, manifested his knowledge that he bore a person supe-

rior to the others, by whom he was surrounded. Neither would he allow any other person to mount him, except one groom, who constantly took care of him, and when rode by him, his motions were far different, and such as seemed to say, that he bore an inferior. When I lost my way, I was accustomed to throw the reins down his neck, and he always discovered it, in places where I, with all my observation and boasted superior knowledge, could not. Who can deny the sagacity of dogs? There is a link between all animals. Plants are so many animals which eat and drink; and there are gradations up to man, who is only the most perfect of them all. 'The same spirit animates them all in a greater or less degree.'

These cases taken from the brutes, strongly prove, that the expression, *memory of places*, is far from designating the full extent of the sphere of activity, filled by the sense of locality, or sense of the relations of space; for, dogs, pigeons, falcons, &c., which regain their old home or country, never return by the same route by which they left it. The sense of locality is rather the faculty of being correctly guided in places—of finding the course we wish to pursue, in spite of by-paths, woods, rivers, mountains, &c.; it is the faculty of ascertaining the relations of space, and therefore, I use the expressions, sense of locality, sense of the relations of space, in preference to that of *memory of places*.

Such a sense is indispensably necessary to brutes, which must be able to find their home, den, nest, kennel, or young. What could they do without it? How could we conceive, without this sense of locality, many of the most remarkable phenomena in the animal world, such, for instance, as the migrations of animals, which, without dispute, are an important point in the natural history of the sense of locality.

On the Migrations of Animals.

Why, at a certain season of the year, do some species migrate into other climates, and, the next season, return to the country which they left ? and why, on the contrary, do some species not migrate at all ?

Charles George Leroy's reply to this question, though incorrect, is, however, more specious than those hitherto given by naturalists. These are his words : "Nothing more resembles the occult qualities of the ancients, than the principles to which Reaumur attributes the actions of brutes. He says, for instance, that a bird of passage has an inward perception of the time when it is necessary to change its abode, and feels an attraction towards a certain place. It must be admitted, that an attraction felt by a being towards a certain region of which it has no knowledge whatever, would be a very extraordinary thing, and that the perception of a being that cannot perceive, would be still more so. It is difficult, no doubt, to ascertain precisely, how this habit of migrating, was originally established. There is reason to believe, that the disagreeable sensations, produced by a climate unsuited to the animal's constitution, gradually gave rise to it ; an age, perhaps, may have been necessary to establish the perfect regularity of these migrations. But, at present, it is certain that the knowledge of the necessity of the passage, and of the time for starting, is the result of instruction, continued from generation to generation. They that want this instruction, do not migrate ; and it is clearly visible, that the young birds are led by those which derive knowledge and authority from age and experience. Take the swallows, for instance, which every one may observe. Their departure is always preceded by assemblages, whose frequency and duration leave no doubt, that their object is, to prepare for a journey, undertaken by beings that are able to feel and understand, and can join in a common plan. The rapid and diversified chattering that prevails at these assemblages,

clearly indicates a communication of precepts, necessary for the numerous progeny of the season, which require some preliminary, and often-repeated instruction, to be prepared for this great event. Their frequent trials by flying in flocks, are no less indispensable, and they are always followed by a repetition of instructions, that resound from our roofs and chimnies. Such a project would be indicated to us in a similar manner, in an assembly of men whose language we did not understand. But the frequency of the phenomenon is a better proof than this analogy, that these migrations are not the result of a blind, automatical disposition. If at the time appointed for the passage—a time, which the season does not allow them to postpone without compromising the safety of the whole species—even a pretty large number are found too young to follow the flock, they are abandoned, and remain in the country. But let these live to become adults, *the attraction towards a certain region* is not felt, or at least is not sufficient to guide them, and they finally perish of hunger, victims of their ignorance and that tardy birth which has deprived them of the means of following their parents. If, as is pretended, the actions of animals are performed by a blind power of nature, none of these inconveniences would happen. There would be no tardy births; every single action would be done at a specific moment, as well-regulated clocks all strike at the same instant; and a considerable portion of the species would not be sacrificed to the voluntary errors of those to whom they owe their existence.”*

If in place of the *occult qualities of the ancients*, we substitute *the organ of locality, of the relations of space, of the relations of place*, Leroy's whole objection will apply to the organ of locality; it is my business, therefore, to refute it.

Leroy has completely forgotten, that migrating ani-

* Op. cit. p. 215, 218.

mals, in the spring, return to the country which they left in the autumn. Now, what forces them to quit a climate where they are well off during our winter, and where they might do well, the whole year? If it were true, that the *disagreeable sensations produced by a climate unsuited to the animal's constitution* could have given rise to migration, this circumstance would, at most, only induce them to fly from a climate which incommodes them, and seek a milder one, but not by any means to return, not only to the same country, but to the very spot which they left, which, however, is the case. Every body knows, that the same pair of nightingales return to the same bush; the same pair of swallows, to the eaves of the same roof; and the same pair of storks, to the same chimney.

Can a naturalist think that the emigrations of animals would be trusted to trials, whose results are uncertain? Would not the species have perished during the ages, that were required to be instructed in these trials? All birds of passage do not assemble in flocks like the swallows. In many species, the individuals fly alone during the whole passage; such as the red-breast, wren, (*motacilla troglodytes*,) the three-toed wood-pecker, (*picus tridactylus*,) the falcon, &c., at least they traverse a considerable space, before assembling in flocks. The young and females of these species, ordinarily depart from eight to fifteen days before the males; in the spring, the latter return, nearly the same number of days before the females. This instruction, therefore, which, according to Leroy, the old ones give to the young, is all a chimera. I exposed some young cuckoos in my garden, that they might be fed by other birds. While the other cuckoos remained in the country, the two young ones which I had reared, did not quit the garden, but disappeared at the period of the migration of their species, though they had had no communication with any of the old ones.

I believe that the cases, where a large number of individuals stay behind and thus perish, are rare; for, there

is a relation between the time of hatching and that of migration. The yellow mocking-bird departs at the end of June, and returns towards the middle of May. The nightingale and cuckoo depart later, and return during the first weeks of April. The swallow starts still later, and returns still sooner. If there are any feeble, ill-formed, or tardy ones among them, it is true, they perish; but it is only a confirmatory proof, that the migratory instinct is indispensable to the preservation of these species.

If it were the inclemency of the season, which inspires such animals with the disposition to migrate, why does not the severest cold, when our sparrows, partridges, and ravens freeze in the air, determine them to migrate into more southern countries? Who tells the *motacilla troglodytes*, and the *motacilla regulus*, the smallest of our birds, that they can endure the severest winters, while the stork and the vulture are forced to seek another sky.

It is said, too, that want of nourishment forces birds to migrate; but, if this were the case, what should induce them in the spring to return from a country where they would find an abundance of food during the whole year. Besides, birds migrate long before food becomes scarce; and they are frequently obliged, particularly if a few cold days supervene, to move to a considerable distance to obtain nourishment. You may supply a nightingale most abundantly with food, yet still you may observe him, at the period when his species migrate, fluttering about in his cage with every sign of uneasiness, particularly when the morn shines brightly; for it is then that nightingales are most fond of travelling. In certain countries, the field-lark, for example, is a bird of passage; in others, it does not migrate, but assembles in flocks during winter. Now, does not this fact furnish an objection against organology? If birds migrate in consequence of the activity of an organ, ought not their conduct to be the same in all countries? External circumstances, without doubt, exert a marked influence on the development and excitement of an organ. Thus,

birds reared in warm rooms, begin to sing earlier than those that live in the colder open air. Hens kept in very warm coops, never cease to lay, except during moulting. But heat does not create ovaries, nor songs. So, too, external circumstances are incapable of producing the propensity to migrate, unless the propensity be already determined by a proper organ. This is proved by the cases of the partridge and sparrow, just mentioned.

We must, therefore, certainly admit in the brutes a primitive sense and organ of locality, and that the activity of this sense varies, not only in different species, but in different individuals of the same species.

External appearance of the organ of Locality in Brutes.

At first sight, this organ does not appear to be situated in the same place in brutes as it is in man, and it even seems to be very differently situated in the different species. This anomaly, which is only apparent, arises, when one or more other organs, such as that of colors, tones, numbers, as in man and the singing birds, are found outside of the organ of locality, which, in consequence, is carried nearer to, or farther from, the median line. But when these faculties and their corresponding organs are wanting, the organ of locality is situated altogether on the side,—a convincing proof that the brains of the lower animals, are only fragments of the human brain, and that both are alike composed of many organs. In the smaller species of migrating birds, it is very difficult to distinguish the organ of the sense of locality. Even in the larger kinds, it may be easily confounded with the organ of the love of offspring. In the woodcock, and in some species of migrating falcons, the organ of locality appears precisely as it does in man, with this difference, that it is situated a little nearer the sides of

the head, and almost touches the posterior margin of the orbits.

In regard to the mammifera, we must never forget to inquire, whether the animal is of a migrating species, or is only distinguished from other individuals of its species, by a little stronger sense of locality. Squirrels, which, generally, have a pretty active sense of locality, sometimes emigrate in very numerous flocks to distant countries; but ordinarily they quit the woods in winter, when the cold becomes unpleasant, and establish themselves in our gardens. When a boy, I always was in the habit of keeping some; and I observed that, in the day-time, they would climb over the walls and the houses, to get into the neighboring gardens. In the evening, they would hastily return to the house to pass the night, in a box of cotton. We may observe, in their crania, two fine oval prominences, directly behind and above the great bulb of the olfactory nerve. The squirrel has no frontal sinus. The lemmings, at certain times, collect together in flocks of incalculable numbers at the approach of autumn. They leave the mountains in order of battle, pour into the plains, and continue their march in a straight line, and are never turned from it by perils or obstacles of any description. Would this be possible, asks Goeze, if these creatures were not impelled by a particular instinct? if they were not endowed with some intellectual faculties?* On examining the lemming's head, we cannot help being struck with the internal cause of this propensity. Its head, in front, and directly behind the eyes, is very broad, swelled out, and not contracting to a point before, like most animals. This is the reason why the propensity to travel is absolutely irresistible in these animals; they are arrested neither by fire, nor water, and will pass over brooks, rivers, marshes, and lakes, though they perish by thousands in

* *Europaeische Fauna oder Naturgeschichte der europaeischen Thiere* (European Fauna, or Natural History of the Animals of Europe.) Vol. II. p. 268.

doing it. They that survive the expedition, return the following spring, and again establish themselves in their Alps.

As the sense of locality differs so remarkably in different dogs, we may make a very instructive collection of the skulls of these animals. All of them in my possession concur in confirming my discovery, relative to the organ of locality. The skull of the bitch that never could recollect in which story of the house I lodged, is retracted in front and on the sides, pl. lxxxi. fig. 1. That of the bitch, which, though only four months old, could find its mistress's house, after being lost beyond the outer barrier, and would run all over the city without losing her way, is very broad and prominent in the same region, on the sides, as well as towards the top of the head. See the same plate, fig. 2. During the life of the animal, I was in doubt whether this prominence was not formed by the frontal sinus; but, on examining the skull, I saw that the whole bony box was filled by the brain, and that, in fact, there was no sinus. In all the skulls of dogs, the breadth of this region is in proportion to the activity of their sense of locality. After all these proofs, which are confirmed in every species of animals and in every individual, endowed with a very active sense of locality, can we still doubt that this sense is a fundamental faculty, whose organ is situated in the region, which, after numerous observations, I have assigned to it?

Further accounts of the organ of the sense of Locality, and of its sphere of activity, in Man.

In man, the faculty of judging of the relations of space extends to other objects also. It gives him the power of finding his way; it gives him what is called the *coup-d'œil*; it enables him to judge of the face of the country—to determine the position of armies, and to regulate their marches; it enables the officer to choose

the shortest route, or leads him, by secret paths, to the point he wishes to occupy. When the commander-in-chief is deficient in the sense of locality, he needs an aid-de-camp that is eminently endowed with it. Thus, Villars, it is said, supplied Turenne's deficiency in this quality. I have always found the organ of the sense of locality very large in military men who are said to excel in the faculty of finding their way; consequently, this faculty plays a considerable part in the operations of war. Without this organ there would be no such thing as geography and topography. All who are distinguished for making accurate charts, are capacitated for this work, by the activity of this faculty; by virtue of which, also, the mind of man traverses the infinity of space.

Endowed with another faculty still, (the sense of mathematics,) the astronomer calculates the distances and movements of the stars. I have seen no great astronomers in whom this organ was not very well developed. Look at the heads of Kepler, Galileo, Newton, Tycho Brahe, Descartes, Pascal, Hell, Lalande, Laplace, Burgs, Bessel, Bode, Olbers, Zach. The sense of locality, combined with that of arts and colors, produces the landscape-painter. Frequently, when I am asked in company, my opinion of an artist, I have determined, by means of organology, the department of painting which he would choose in preference to others. In such cases, most people have thought that there was some trick on my part, and that I knew beforehand the talent, which I had the art of divining. At Munster, where I was asked my opinion of an artist, I replied that his natural vocation was to be a landscape-painter. His organs of locality and color were particularly developed. In fact, he was a portrait-painter, and they thought I was deceived; but M. Ringklage declared that he painted portraits only for a living, and that, from childhood, he had had a decided taste for landscape.

Examine the portraits of Claude Lorrain, Vernet, Hackert, Breugel, pl. lxxxii. fig. 1.

I have been frequently asked, what is the organ of

the passion for play. I have looked for this organ in many inveterate professional gamblers, but have never been able to discover any thing constant. The reason is, that different games, to be played well, require different talents. Hence we may understand why it is, that persons who excel in all games at cards, are never, though using all possible application, more than tolerable players of draughts, and chess; and why, on the contrary, the best chess-players, are often poor card-players. Having had an opportunity of seeing many of the most celebrated chess-players, I have observed that they all had the sense of locality very large; and I conceive that the great talent of these players consists in the power of forming vividly and accurately, in their mind, a great number of possible positions of the pieces. But this is not what is required in games with cards, which rather require a talent of rapid combination.

In the history of the discovery of this organ, I have indicated its appearance on the external surface of the head. In the brain it is formed by the convolutions marked xvii. pl. iv. v. ix. xiii.

It frequently happens that this organ is very well developed, where there is no frontal sinus. In these cases, it is much less apparent than when accompanied by the swelling produced by this sinus, but its true direction is then much better indicated. When these same individuals have a very thick skin, it is even difficult to be sure of its presence by sight alone; but it may always be discovered by the touch.

On Love of Travelling.

When the sense of locality is very active, there results a propensity to change place, a taste for travelling. Idle and uneducated people are easily inclined to vagabond habits. Servants thus organized, do not long remain in the service of any particular person. People, who with the sense of locality, combine some other talent, ordina-

rily seek their fortunes in foreign countries. The painter traverses various countries, in order to obtain subjects for his landscapes; the devotee becomes a missionary; the naturalist, neglecting objects that have been around him from his birth, goes and explores another hemisphere; the young physician joins the train of some travelling lord, &c. We may say, without seeing them, that such persons have the organ of the sense of locality large; they are impelled by an inward force, whose existence even, they do not suspect.

A young girl had always had a great desire to travel. She suffered herself to be carried away from her paternal abode by an officer. In consequence of chagrin and remorse, she fell sick. I attended her, and she called my attention to two large prominences which her troubles has caused to arise on her forehead. They were thought by her to be the effect of heavenly wrath, but they were, in fact, the organ of locality which she had never before observed. I saw one day in the street at Vienna, an elderly woman, and was struck by the enormous development this organ had acquired. I entered into conversation with her, and before I had time to ask her country, she told me with the greatest earnestness, that she had fled from Munich to get the place of cook in Vienna, with the design of earning three thousand florins, so that she might spend her life in travelling like a lady. In the mean time, she changed her master every month, because it seemed to her impossible to remain long in the same house. At Torgaw, I was struck with the large size of the organ of locality in a man who was blind from birth, and requested those with me to attend to our conversation. As soon as I asked him what was his favorite occupation, he swore to me that he liked nothing better, than to hear people talk about foreign countries, and that he was always dreaming about them in his sleep. In the biography of Captain Cook, it is expressly remarked, that this navigator had these frontal bumps very prominent; still the biographer is disinclined to recognize the truth of my doc-

trine. The portraits of Columbus, pl. lxxx. fig. 2, and of Vasco de Gama, whose name is immortalized by his discovery of the passage to East-India by the Cape of Good Hope, presents the same conformation. Regnard had a strong desire to travel, from his childhood. The following inscription was made for him.

Gallia nos genuit; vidit nos Africa; Gangem
Hausimus, Europamque oculis lustravimus omnem;
Casibus et variis acti terraque marique,
Hic tandem stetimus, nobis ubi defuit orbis.*

A very convincing proof is furnished by M. Jaubert, Master of Requests, and Professor of Oriental languages in the Royal Library. This *savant* was always passionately fond of travelling, and was always employed by the government on important missions in Turkey, Persia, &c. His organ of locality was even more prominent than Breugel's, the landscape painter. I might here cite a long list of travellers, dead, as well as living, in whom the organ of locality was very large; such as M. M. Choris, Gaimard, Freycinet, &c.

A London physician, known by the name of Memory Thomson, was an astonishing example of local memory. Within twenty-four hours and at two sittings, he made a correct plan of the whole parish of St. James, with many parts belonging to the parishes of Mary-le-Bone, St. Anne, and St. Martin. This plan contained all the places, streets, courts, passages, markets, churches, chapels, public edifices, stables, all the corners of houses, and a great many other objects, such as pumps, railings, trees, and sheds, besides an exact plan of Carlton House, and the palace of St. James. He performed all this without the aid of plan, compass, book, or any other data whatever. He also drew, from memory, an exact plan of the parish of St. Andrews, and he declared that he could

* "France gave us birth; Africa has seen us; we have drank from the Ganges, and beheld all Europe. After various misfortunes, we stand here at last, where the very universe ends."

make some as good, of St. Giles in the Fields, of St. Paul, of Covent-Garden, of St. Clemens, and New-church. Name any building whatever in some large street, and he tells in a moment what business is carried on in it, and the shop, with every thing relative to its situation, whether it is in the right, left, middle, or at its extremities.— In going over a large house, completely furnished, he would give a verbal account of it, and subsequently a written description without a single omission. On the other hand, a conversation which he may have heard between a couple of men, thrice repeated, would be entirely new to him in a few days.

But the opportunity of verifying the real cause of the taste for travelling, is so common, that it will be sufficient for me to conclude, by mentioning that learned and celebrated naturalist, Baron Humboldt.

Sense of Locality in Insanity and Idiocy.

Frequently, when the organ is exceedingly active, there results a strong passion that may degenerate into insanity. Avicenna has already described this partial insanity under the name of *cutubut*, *wandering melancholy*. Dr. Beutel communicated to us the history of the Abbe Dabrowki, of Prague, as celebrated for the powers of his mind as for his profound knowledge. This man had an invincible passion for travelling, which was frequently manifested by an urgent and instantaneous necessity of changing his abode. These fits are so violent, that they have the character of real disease. Sometimes he wakes up in the night, and cannot help getting up and running across the fields. Once he had a fit when the weather was very cold; yet in spite of all that his better reason could do, he rose, dressed in the dark, and instantly set off; and he had gone nearly two leagues, with the snow up to his knees, before he could persuade himself to return and go to bed. Dr. Beutel, who at this time had no idea of organology, told me that

the only thing that had struck him in the appearance of this man, *was two enormous prominences on the forehead, directly over the eyebrows.*

Fodéré relates a case of true alienation of this organ, taken from a Memoir, of M. Savary, entitled, *Faits pour servir à l'histoire des lésions des facultés intellectuelles.* (Facts, to serve as materials for a history of disorders of the intellectual faculties.) "A carpenter, forty-seven years old, with every appearance of good health, was assailed by a crowd of strange and incoherent ideas. He often imagined himself fluttering in the air, or traversing smiling fields, apartments, old chateaus, woods, and gardens, which he had seen in his infancy. Sometimes he seemed to be walking in public courts, places, and other spots that were known to him. While at work, the moment he was going to strike his axe at a given place, an idea would pass through his head, made him lose sight of his object, and he would strike somewhere else. He once rose at midnight to go to Versailles, and found himself there, without being sensible of having made this journey.

"None of these hallucinations prevent the patient from reasoning correctly. He is astonished, and laughs at himself, for all these fantastic visions, but still is unable to withdraw himself from their influence."

This faculty is sometimes quite active even in idiocy of various grades.

At Dresden, M. Bloede told us of a man who was always very uneasy, whenever he was obliged to remain more than one or two days in the same place. He spends the whole year in travelling over the greatest part of Saxony, Lusatia, and Silesia. He has a fixed station for every day; he visits all the landlords, to whom he carries the compliments and salutations of their friends and parents, and, with his eyes closed, and his body fixed, he relates the minutest details of his journey with astonishing volubility. Bloede assures us, that this man has also the two prominences of the sense of locality large and very marked. Now, after all the proofs I

have produced, how can it be any longer doubted, that the sense of locality is a fundamental faculty, exercised by the cerebral part that I have assigned to it?

“Our two authors,” says Demangeon, “attribute to the organ of locality, the taste for travelling, the presentiment and discovery of worlds, astronomy and geography, the taste for landscape painting, the periodical migration of certain animals, as well as the instinct which enables each animal to find its home. This organ seems to be overloaded, and if we have before seen many organs for little things, we have here an instance of the reverse. They explain these differences by the different degrees of the size of this organ, which, however, does not remove the reasonable suspicion, that they may also be owing to other organs, such as those of habitation and height; and that there may even be a particular one for astronomy and chronology, for seasons and atmospherical changes, which birds announce not only by periodical migrations, but also by flying high or low. In this way, rabbits and other animals change their customary hours of going out and feeding at the appearance of approaching rain.”

The only reasonable idea in this objection, is, that the instinct of choosing a habitation, may be attributed to the sense of locality. But it is not enough to reason; reasoning must be supported by observation, and must destroy the facts mentioned in the account of the instinct which impels animals to seek higher places.

In a former objection, M. Demangeon would derive from the single instinct of self-preservation, fear, courage, circumspection, prudence, love of offspring, the desire of immortalizing one's name, and consequently the most different propensities and talents. Now, he finds that the organ of the sense of the relations of space is overloaded, because I derive from it the taste for travelling, the presentiment and the discovery of worlds, astronomy and geography, the taste for landscape painting, the periodical emigrating of certain animals, and the instinct which enables them to find their home—things, all per-

fectly analogous ! If in the rest of his objection, M. Demangeon is tempted to put the faculty of knowing the relations of space on a footing with the sensibility of a corn, or the stump of an amputated limb ; with the electricity of the feathers of birds, or the hair of other animals, which gives the presentiment of rain ;—I leave it to him to justify his course.

Sense of Order.

The sense of locality, making known the relations of space, I have been inclined to think that it might also be the sense of taste, of symmetry, and of order. It is certain that some persons are destitute of all spirit of order ; while others, from their infancy, are pained at the sight of the slightest irregularity in the furniture, tables, &c. This sentiment sometimes amounts to a passion, even in idiots. I have already mentioned the soi-disant savage of Aveyron, in the Institution for the Deaf and Dumb at Paris, and I know many similar cases. On the other hand, I know individuals, whose organ of the sense of locality is developed to such a degree, that they spend their whole life in running about, and who still are scarcely conscious of the most hideous disorder in their household ; so that I suspect the spirit of order must be referred to a particular fundamental faculty, and consequently to a particular organ.

Dr. Spurzheim speaks of a girl he saw at Edinburgh, idiotic in many respects, but in whom the love of order was so active, that she avoided her brother's chamber, on account of the disorder that reigned within it. He thinks it probable, that the organ of order is on the external part of the superciliary arch, between those of color and numeration. Although he has a great number of observations in its favor, he thinks it necessary to multiply experiments. But these experiments are difficult to make, because, among the organs situated in the inferior-anterior region of the head, there are some very

small ones, in the number of which is apparently that of order. For my own part, I have not succeeded in collecting a sufficient number of invariable facts, to justify any opinion whatever, on the seat of this organ.





